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THE

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MEDICAL AND SURGICAL
JOURNAL:

EXHIBITING

A CONCISE VIEW

OF THE

LATEST AND MOST IMPORTANT DISCOVERIES

IN

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PHARMACY.

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3. The Pharmacopœia of the King and Queen's College of Physicians in Ireland, M.D.CCC.L.

4. Pharmacopœia Nosocomii in curam Morborum Cutaneorum Fundati, A.D. MD.CCC.XLI.

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In Vol. LXXIV., p. 55, line 58, *for* unrecovered, *read* unweaned.
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NOTICES TO CORRESPONDENTS.

Communications have been received from Dr KINNIS, Dr STRATTON, and Mr REDDY.

The following publications have been received:—

Observations relating to the Science and Art of Medicine. By William Wegg, M.D., Cantab, Physician to the St George's and St James's Dispensary. London, 1851. 8vo. Pp. 233.

The Philosophy of Vital Motion. By Charles Bland Radcliffe, M.B., Lic. of the R. C. of Physicians, Lecturer on Vegetable Physiology and Botany at the Westminster Hospital, &c. London, 1851. 8vo. Pp. 158.

Southern Medical Reports; consisting of General and Special Reports on the Medical Topography, Meteorology, and Prevalent Diseases in Louisiana, Alabama, Mississippi, N. Carolina, S. Carolina, Georgia, Florida, Arkansas, Tennesee, Texas. Edited by E. D. Fenner, M.D., of New Orleans, &c. Volume I. 1849. New Orleans, New York. 1850. 8vo. Pp. 468.

On the Health of London during the Six Weeks terminating September 28, 1850. By John Webster, M.D., F.RS., F.R.C. Physicians, &c. London, November 1850. 8vo. Pp. 19.

Notes of a Recent Visit to several of the Provincial Asylums for the Insane in France. By John Webster, M.D., F.R.S., F.R.C. Physicians. London, October 1850. 8vo. Pp. 35.

Remarks on Insanity: its Nature and Treatment. By Henry Monro, M.B., Oxon, Fellow of the R. C. of Physicians. In Two Parts. Part II. London, 1850. 8vo. Pp. 77 to 150.

Medicines, their Uses and Mode of Administration; including a Complete Conspectus of the Three British Pharmacopœias, an Account of all the New Remedies, and an Appendix of Formulæ. By J. Moore Neligan, M.D., Ed., M.R.I.A., Licent. of the Coll. of Surgeons of Ireland, &c. &c. Third Edition. Dublin, Edinburgh, London, 1851. 8vo. Pp. 555.

On the Action of the Muscular Coat of the Bronchial Tubes in Respiration. By C. Radclyffe Hall, M.D., M.R.C.S.E., Fellow of the R. C. of Phys., Edinburgh, &c. Worcester, 1850. 8vo. Pp. 21.

On the Causes, Symptoms, and Treatment of Spermatorrhœa. By M. Lallemand, formerly Professor of Clinical Surgery at the University of Montpellier; Member of the R. Acad. of Med., Paris, &c. Translated by Henry J. M'Dougal, Surgeon, Fellow of the R. M. Chir. Society, &c. Second Edition. London, 1851. 8vo. Pp. 441.

Essays and Notes on the Physiology and Diseases of Women, and on Practical Midwifery. By John Roberton, formerly Senior Surgeon in Ordinary to the Manchester and Salford Lying-In Hospital and Dispensary for Diseases of Women and Children. London, 1851. 8vo. Pp. 530.

Religion and Science: Their Independence of each other, and their Mutual Relations. By a Physician. London, Manchester, 1851. 8vo. Pp. 23.

Dr Hooper's Physician's Vade Mecum; or a Manual of the Principles and Practice of Physic. New Edition, considerably Enlarged and Improved; with an Outline of General Pathology and Therapeutics. By William Augustus Guy, M.B. Cantab., Fellow of the R. College of Physicians; Professor of Forensic Medicine, King's College, London; Physician to King's College Hospital, &c. London, 1851. 12mo. Pp. 576.

Third Report of the Somerset County Asylum for Insane Paupers. From 1st January to the end of the year 1850. Wells, 1851. 8vo. Pp. 55.

Additional Observations on the Nitrate of Silver; with full Directions for its Use as a Therapeutic Agent. By John Higginbottom, Hon. Fellow of the R. C. S. England. London, 1850. 8vo. Pp. 40.

The London Medical Gazette, or Journal of Practical Medicine. No. 1203, New Series 295, December 20, 1850,—to No. 1215, New Series 307, March 14, 1851.

The London Journal of Medicine. No. 25, January 1851,—No. 27, March 1851.

The British and Foreign Medico-Chirurgical Review, or Quarterly Journal of Practical Medicine and Surgery. No. xii., October 1850. No. xiii., January 1851.

The American Journal of the Medical Sciences. No. 41, New Series, January 1851. Philadelphia.

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Quarterly Returns of the Marriages, Births, and Deaths Registered in the Divisions, Counties, and Districts of England. No. 8, 1850.

The Retrospect of Medicine: or Half-Yearly Journal. Edited by W. Braithwaite, Lecturer on Obstetric Medicine at the Leeds School of Medicine. Vol. xxii. July—December 1850. London, 1851. 12mo.

The Half-Yearly Abstract of the Medical Sciences. Edited by W. H. Ranking, M.D., Cantab., Physician to the Norwich and Norfolk Hospital. Vol. xii. July,—December 1850. London, 1851. Post 8vo.

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2. Report on the Employment of the Mineral Waters of Vichy in the Treatment of Gout, followed by an Answer to some Allegations against the Solution of Urinary Calculi. By Charles Petit, D M.

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Communications have been received from Dr Kinnis, Dr Stratton, and Mr Thompson.

The following Publications have come to hand.

On the Origin of Inflammation of the Veins, and on the Causes, Consequences, and Treatment of Purulent Deposits. By Henry Lee, F.R.C.S., Assistant-Surgeon to King's College Hospital, &c. Jacksonian Prize Essay, 1850. London, 1850. 8vo. Pp. 91.

Pestilence: its Source and Suppression. Isle of Man, 1850. 8vo. Pp. 23.

Hydrocephalus Reconsidered, and its relations to Inflammation and Irritation of the Brain defined; with Cases from Hospital and Private Practice in Exemplification of its Pathology, Prevention and Successful Treatment. By Thomas Weeden Cooke, M.R.C.S. Eng., &c. London, 1850. 12mo. Pp. 112.

Short Notes in Reply to Dr Davey's Work, entitled Contributions to Mental Pathology; with a Brief Notice of Dr Davey's Career in Ceylon, carefully collated from Official Documents and Information. By J. M. Grant, M.D., M.R.C.S.E., Assistant-Surgeon to Her Majesty's Forces. Columbo, 1850. 12mo. Pp. 108.

Oratio Harveiana in Ædibus Collegii Regalis Medicorum Habita, Die Junii XXIX., MDCCCL. A Jacobo Arturo Wilson, M.D. Londini, MDCCCL. 8vo. Pp. 29.

Appendix (A) to the Report of the General Board of Health on the Epidemic Cholera of 1848 and 1849. Report by Dr Sutherland, presented to both Houses of Parliament by command of Her Majesty. London, 1850. 8vo. Pp. 164.

Appendix (B) to the Report of the General Board of Health on the Epidemic Cholera of 1848 and 1849. Report by Mr Grainger, presented to both Houses of Parliament by command of Her Majesty. London, 1850. 8vo. Pp. 201.

The Lumleian Lectures for 1850, delivered at the Royal College of Physicians, London. By R. B. Todd, M.D., F.R.S. On the Pathology and Treatment of Delirium and Coma, from the London Medical Gazette. London, 1850. 8vo. Pp. 37. With sequel, Six Lectures on the Treatment of Delirium and Coma, delivered at King's College Hospital. 8vo. Pp. 34. Both, pp. 71.

The Historical Relations of Ancient Hindu with Greek Medicine, in connection with the Study of Modern Medical Science in India. Being a General Introductory Lecture, delivered June 1850, at the Calcutta Medical College, by Allan Webb, M.D., author of the Pathologia Indica, Surgeon Bengal Army, Professor of Descriptive and Surgical Anatomy. Calcutta, 1850. 8vo. Pp. 34.

On the Identity or Non-Identity of the Specific Cause of Typhoid, Typhus, and Relapsing Fever. By William Jenner, M.D., London, Licentiate of the Royal College of Physicians; Professor of Pathological Anatomy in University College, London; Assistant Physician to University College Hospital. (From Vol. 33 of London Medico-Chirurgical Transactions.) London, 1850. 8vo. Pp. 20.

On the Identity and Non-Identity of Typhoid and Typhus Fever. By William Jenner, M.D., London, &c. London, 1850. 8vo. Pp. 102.

The Profession of Medicine, its Study and Practice, its Duties and Rewards. An Address delivered at St Bartholomew's Hospital, at the Opening of the Medical Session of 1850-1851. By Charles West, M.D., Fellow of the Royal College of Physicians, Physician-Accoucheur to the Hospital, and Lecturer on Midwifery in the Medical College, London. 1850. 8vo. Pp. 32.

Address to the Medical Students of London. Session 1850–1851. By J. Stevenson Bushnan, M.D., Member of the R. C. of Surgeons, and Fellow of the R. C. of Physicians of Edinburgh. London, 1850. 8vo, pp. 16.

The Philosophy of Spirits in Relation to Matter; showing the Real Existence of two very distinct kinds of Entity which unite to form the different Bodies that compose the Universe, Organic and Inorganic. By which the Phenomena of Light, Heat, Electricity, Motion, Life, Mind, &c. are reconciled and explained. By C. M. Burnett, M.D. London, 1850. 8vo. Pp. 312.

General Pathology, as conducive to the Establishment of Rational Principles for the Diagnosis and Treatment of Disease; A course of Lectures delivered at St Thomas's Hospital during the Summer Session of 1850. By John Simon, F.R.S., one of the Surgical Staff of that Hospital, and Officer of Health to the City of London. London, 1850. Post 8vo. Pp. 288.

Influence of Physical Agents in the Development of the Tadpole of the Triton, and the Frog. By John Higginbottom, Hon. Fellow of the R. C. of Surgeons of England. From the Philosophical Transactions, Part. ii. for 1850. London, 1850. 4to. Pp. 6, with Plate.

The Elements of Materia Medica and Therapeutics. By Jonathan Pereira, M.D., F.R.S. and L.S., Fellow of the Royal College of Physicians in London, Associate of the College of Physicians in Philadelphia, &c., and Assistant Physician to the London Hospital. Third Edition, Enlarged and Improved, including Notices of most of the Medicinal Substances in use in the Civilised World, and forming an Encyclopædia of Materia Medica. Vol. II. Part I. London, 1850. 8vo. Pp. 899—1538.

Address before the American Medical Association, at the Anniversary Meeting in Cincinnati, May 8, 1850. By John C. Warren, M.D., President of the Association. Boston, 1850. 8vo. Pp. 65.

Notice of an Unpublished Manuscript of Harvey. By G. E. Paget, M.D., Fellow of Caius College, Cambridge, and Fellow of the Royal College of Physicians, London. London, 1850. 8vo. Pp. 20.

Report of the Proceedings of the Pathological Society of London, Fourth Session, 1849—1850. London, 1850. 8vo. Pp. 145—297. Concludes Second Volume.

A Manual of Qualitative Analysis. By Robert Galloway, F.C.S., Lecturer on Chemistry, Queenwood College, Hampshire, &c. London, 1851. Post 8vo. Pp. 119.

Address to a Medical Student. Second Edition. Oxford, London, 1850. 12mo. Pp. 167.

Report on the Medical Literature of the United States. Presented to the American Medical Association at its Third Annual Meeting, held in Cincinnati, May 1850. Philadelphia, 1850. 8vo. Pp. 37.

Remarks on Insanity: Its Nature and Treatment. By Henry Monro, M.B. Oxon, Fellow of the Royal College of Physicians. In two Parts, Part I. London, 1850. 8vo. Pp. 75.

Of the Crystalline Lens and Cataract. By Bernard Edward Brodhurst, London, 1850. 8vo. Pp. 243.

Guy's Hospital Reports, Second Series. Edited by Edmund Lloyd Birkett, M.D., Cantab., &c., and Alfred Poland, Fellow of the Royal College of Surgeons, England, &c. Vol. VII., Part 1. London, 1850. Pp. 271.

The London Medical Gazette, or Journal of Practical Medicine. No. 1190. New Series, 282 vol., September 1861, to No. 1202, New Series, 294. 13th December 1850.

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The Dublin Quarterly Journal of Medical Science. No. XX. November 1850.

The American Journal of the Medical Sciences. No. 40. New Series, October 1850, Philadelphia.

Weekly Tables of Mortality for the Metropolis. No. 38, Saturday, 21st September 1850, to No. 50, Saturday, December 14, 1850.

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MEDICAL AND SURGICAL JOURNAL.

1ST JANUARY 1851.

PART I.

ORIGINAL COMMUNICATIONS.

ART. I.—*Observations* relative to the State of the Skull and of the Brain in Congenital Chronic Hydrocephalus, and to Idiocy and Paralysis attending it, with Cases.* By FRANCIS BATTERSBY, M.B., T.C.D., Fellow of the Royal College of Surgeons in Ireland, Surgeon to the Dublin Institution for Diseases of Children, and formerly Demonstrator of Anatomy in the Park Street School of Medicine. (Concluded from Vol. LXXIV. P. 73.)

BRESCHET states that hydrocephalus may co-exist with a head natural in size, or of diminished volume. The first of these conditions he thinks most common; but this is not the case. The second is always congenital. Most frequently children, with a head of diminished size, have, at their birth, the fontanelles closed, and the sutures ossified. The most of these children die as soon as they are born, or perish in convulsions a very short time after birth. They are absolutely deprived of intellectual faculties, and their senses are obliterated. The head of these little ones is constantly pointed at its summit, and depressed laterally towards the ears. The forehead is also flattened, and the head covered with thick hair. The eyes are constantly convulsed; they rotate, and are insensible to the light; the pupil is much dilated, and in some cases the iris has appeared to adhere to the cornea. The face, without any expression, is the image of stupidity. The voracity of these children is great, yet nutrition is badly performed; liquids are swallowed with difficulty; they lose their breath, and give fears for their suffocation. The stools and urine are discharged involuntarily. The voice is a feeble and hoarse sound. The feet are crossed immovably; the thighs are flexed on the abdomen. These unfortunates can never stand nor walk. Their extremities are cold. They appear to have only a vegetative existence; they never exhibit a speck of reason, and are one of the saddest pictures of humanity.*

---

* Read to the Dublin Obstetrical Society, February 2, 1850.

A case of this kind has been recorded by Mr Ward.†

An idiot boy died aged eleven months. Its cry was even less expressive than that of a puppy, nor had it the tone of an infant's voice. The child was illegitimate. There was little or no forehead; the frontal bone sloping backwards immediately above the eyes; neither were there any fontanelles. It had convulsions from birth; and its fingers were always clenched over its thumbs. It could hear and see till a short time before death, but it gave no sign of intelligence.

The following state of the parts was found after death.

The skull cap was twice its ordinary thickness. The sutures were all closed. There was one ounce and a half of fluid in the ventricles of the brain; the convolutions were absent. There was no *corpus callosum.* The central portions of the brain were so rudimentary as scarcely to be distinguished. The nerves were all perfect.

The following is a case of the same description.

Case 5. Patrick Moran, aged one year and nine months, brought to the Institution for Diseases of Children, November 28, 1849. This child never made an attempt at speaking. He sees and hears well. His forearms are stiff, hands pronated, and fingers kept closed over his thumbs. He cannot take anything in his hands, nor can he extend his fingers, except partially the index and middle finger. He cannot walk, nor stand, nor sit, unless tied in his chair. The legs are very much wasted, being little else than skin and bone.

His head was quite ossified at birth. It is now very small, being only sixteen inches by nine. It is very rounded, the forehead shelving remarkably backwards, and it is depressed laterally towards the ears, which are too large, and project much from the side of the head. He has a very fine crop of hair. He has convergent strabismus. There is a general bend backwards of the spine.

For six months he is constantly screaming, thus annoying his parents constantly. His mouth is ever kept open, and from it protrudes an enlarged tongue. Since his earliest days there is a constant flow of saliva from his mouth, keeping his clothes ever wet. His mother says it is impossible to keep him dry. His bowels are constantly confined. Has had no stool for a fortnight.

---

* Dict. de Medecine, *art.* Hydroceph. Chronique, p. 533.

† London Medical Gazette, March 27, 1846.

March 6th, 1850.—He has nearly all his teeth. Cries less during the day, but at night incessantly, notwithstanding the use of strong opiates. I gave him a mixture containing two drachms of camphorated tincture of opium, directing him to get a teaspoonful three times daily, yet it produced not the least effect in quieting him.

August 17*th*.—Has got all his teeth, yet still is constantly slavering his clothes. His teeth are decaying. He remains in just the same state as at first. Eats little, but drinks voraciously, and without difficulty. In the morning takes an immense quantity of drink, and screams loudly and incessantly till it is given him. Stools and urine pass involuntarily. His feet are crossed; his legs are generally flexed on the abdomen. He is less cross than formerly; is often induced to smile, opening his large mouth, and looking hideous, but never laughs. Has a great dislike to women with bonnets; used to have the same for men with hats. His face has become tolerably fat, but his limbs are much wasted, and are always cold. His right side is more powerless than the left; when held up he cannot put forward the right foot. He has never uttered an articulate sound. Is the first child of his parents, who are young.

To this form of disease of the brain, with diminished size of the skull, Cruveilhier proposes to apply the denomination of MICROCEPHALUS. Of this, Cruveilhier states that there are three forms:—1st, microcephalus, with atrophy of the brain: 2d, with serous effusion into the cavity of the cranium: 3d, at the same time atrophy of the brain and hydrocephalus. In the second form, or that with serous effusion into the cavity of the cranium, death ensues at the moment of birth; whilst in microcephalus from atrophy of the brain the patients survive for a greater or less length of time.*

Of a hydrocephalic head of natural size, we have an example in the following case.

Case 6.—James Healy, aged four years and nine months, September 1850. Is the only child of his parents, who are middle-aged. He never spoke a word; smiles often, however unnaturally; is said to laugh occasionally, and cries very seldom. He appears to hear well. He cannot hold up his head perfectly, nor could he do so at all until two years ago, having been until then constantly lying in bed. He cannot sit unsupported, nor crawl along the floor; is always seated in a wicker cart, in which he is supported by pillows.

---

* Anat. Pathol. Livrais, xxxix., Planche iv.

He cannot stand nor walk. He likes to be carried about on his legs, which are then tossed about in a curious way, as if they did not belong to him. During this exercise his arms are kept in the same irregular motion. He makes when thus brought about most hideous faces, the muscles of the face contracting irregularly and without sympathy, and his tongue then often protrudes.

There is no defect in his spine nor any of his limbs. He finds constant amusement in the toys of children, taking them up with half-closed fingers, as these he cannot extend perfectly. He cannot feed himself; is rather tall for his age.

His head is not unusually large, being nineteen and a half by eleven and a quarter inches. There is a depression of the skull at the anterior fontanelle, which is closed but one year. His fæces and urine are discharged involuntarily.

He will touch no food with salt in it. His teeth are all rotten. His clothes are slavered, but this is said to be the case not more than a fortnight.

The third variety, according to Breschet, of hydrocephalus, or that with increased volume of the head, is undoubtedly the most common. It is, Boyer states, a disease peculiar to children; most frequently it is congenital, or they are affected with it before birth, but they may be attacked by it after birth.*

In it the walls of the cranium recede from its centre, and the head augments in volume according as the quantity of fluid becomes considerable. The bones of the face neither participate in nor contribute anything to this enlargement. They preserve their natural volume and form. The bones of the cranium conspiring to its enlargement are the frontal, parietal, the superior part of the occipital, and a small part of the squamous portion of the temporal bones. These bones become expanded, thinned, and membranous. The frontal expands, is elevated, and advances forwards over the eyes and the face, which looks narrower and shorter. The angle which the superior part of the frontal, now enlarged, forms with its orbital portion, diminishes and is effaced almost entirely, so that the eye is driven down and concealed by the lower lid, which ascends to the level of the centre of the pupil. Camper remarks, that this disposition would alone suffice to recognise chronic hydrocephalus, even although all the rest of the head were covered. The bones forming the vault of the cranium are separated, and the intervals, more or less large, separating them, are occupied by a fine membrane, through which fluctuation of the water inside can be felt distinctly. This separation is very great between the parietal bones, and especially at the fontanelles. The membrane filling these spaces is sometimes distended to such a degree as to form a very visible longitudinal tumour. On pressing strongly the fingers upon these parts of the head, no depression is left, and the intervals of the bones yield to this compression like a bladder full of water. On gently striking one of these intervals the liquid can be felt at the opposite side. Resistance is felt everywhere else, that is, in the parts naturally ossified.*

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* Loc. cit., p. 534

In many hydrocephalic heads Breschet found the bones of the skull and of the face almost as fine as a sheet of paper, transparent, and yielding under the finger, as if they had been deprived of their saline parts, and reduced to their organic elements. Buttner, Wrisberg, Marcorel, and Meckel have made similar remarks. They say the cranial bones of their hydrocephalic patients were from one to three lines in thickness, and that they were tender and flexible. This softness pertains either to the entire extent of the bones of the skull, or to a part only. In the frontal, orbital, parietal, and occipital regions are occasionally places where the bone is very fine, transparent, and of an elasticity like that of cartilage. I may here mention that in three cases, two of them aged nine months, and one one year and one month, the skull was so very soft as to be easily divided by a pair of dressing-case scissors. In the fourth, aged one year, it was more solid.

Malacarne† speaks of a hydrocephalic patient with the right frontal bone for many inches fibrous and membranous like the *dura mater.* Bordenave has described a fœtal head of seven months, in which all the bones only offered a small number of disseminated osseous radii. The shape of the bones, the radiated disposition of the osseous fibres, the situation of the most solid parts, and of those which are soft, indicate that this is less a retrograde changing of tissue than imperfection of the osseous formation.

Thinning of the cranium is not constant in hydrocephalus. In a sufficiently large number of cases the bones have been found thicker than natural. Ecmark, Malacarne, and Hartell have found them of a thickness proportional to their surface, or to the volume of the head. Riedlin says he met them twice as thick as natural in a hydrocephalic case of seventeen years. Loder speaks of a child two years old in whom all the bones of the vertex had a thickness of nine or ten lines. The cranium described by Molineux was so thick that that physician took the head of the patient for that of a giant. Albinus had doubts on that point, and Sandifort demonstrated that the bones of this subject had increased in thickness according as the diameters of the head had become larger and larger by the accumulation of the fluid. Breschet met with a case of hydrocephalus, aged twenty-eight years, in which the bones of the skull had the thickness natural to a well-formed adult, and which were united by solid suture.*

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* Boyer, Maladies Chirurgicales, T. v., p. 211.

† Meckel, Pathol. Anat., T. i., p. 270.

The first lineaments of the Wormian bones are observed in hydrocephalic subjects of a very tender age. Breschet remarked little osseous needles in the membranes, by which the edges are most generally united. These needles are very remarkable in the skull of a hydrocephalic fœtus, preserved in the museum of the Rotundo Lying-in Hospital.

The sutures may remain long unclosed. In one of Dr Conquest's cases (Foster), at five years of age, the bones in the course of the coronal suture, on either side of the median line, were two inches apart. In a case by Dr Monro,† the sagittal and coronal sutures were not ossified in a boy aged nine years. In Howship's case at twenty-five years, the vertex was diaphanous, while in the celebrated case of Cardinal the anterior fontanelle was not ossified till his twenty-seventh year.

Dr Baillie has given a case in which the sutures of the skull are said to have opened in a boy aged seven years, who died of hydrocephalus.‡ This separation of the bones is denied entirely by Dr Craigie, who says, "upon the whole, I conceive it may be justly inferred that there is, strictly speaking, no opening of the sutures in chronic hydrocephalus; that the bones, indeed, are separated, and the regular process of ossification is disturbed and suspended, and that in its place the *pericranium* and *dura mater* assume an ossific action, and in this manner deposit between them, points of osseous matter, which eventually unite the bones and close the skull, but do not form genuine sutures."§ In this opinion I coincide with Dr Craigie, and it would seem to be proved by the short description given of the bones of Dr Baillie's patient:—"The edges of the frontal and parietal bones were thinner than is usual at the same period of life; and in examining the edges of the two parietals at the sagittal suture, the processes of union appeared to be more simple in their form and fewer in number than is usual in children of the same age."

Dr Craigie denies the separation or disunion of the sutures in chronic hydrocephalus, for the reason that no sutures exist at its commencement. He gives several instances of a complete or partial consolidation of the cranial bones, which is effected in hydrocephalus chiefly by ossification of the membranes; and this may be established from several isolated points forming in this way an assemblage of Wormian bones.

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* Loco citat., pp. 516, 517. † Annals of Med., Vol. iii. section ii., p. 364.

‡ Transactions of the College of Physicians, Vol. iv., p. 1.

§ Edinburgh Medical and Surgical Journal, Vol. xxxviii., p. 43.

May not one, says Breschet, in this confusion of the osseous pieces, see an analogy with the conformation of the cetacea, fishes, and birds, where the bones of the cranium are formed very early, and present but a continuous whole, without lines of demarcation between separate and distinct pieces ? *

"It must be remarked, nevertheless," says Dr Craigie, "that not every instance of disease and obliteration of the cranial suture is to be ascribed to the previous existence of hydrocephalus, and the membranous ossification of the skull. It is only when it takes place in skulls of unusual size, in some manner deformed, and at a period of life unusually early, that the closure can be regarded as originating from the cause I mention."†

I have now before me a beautiful preparation of a skull belonging to the museum of the Royal College of Surgeons, which very well exhibits the union of the bones by *ossa Wormiana*. The child to which it belonged is stated to have been aged at death thirteen months, but would appear, from the existence of all the teeth, to have been older. All the account I have been able to procure of the patient is, that the head was observed to grow large upon his being eight months old, that he never had convulsions or fits of any kind, and was carried off by an attack of diarrhœa.

In circumference the head measures twenty-nine inches; from ear to ear twenty-one inches. The milk teeth are all present, and are quite sound. (I may mention that in one of the children, whose case has been already given, there were no teeth at one year; in another at thirteen months there were but two.) The skull is very light and diaphanous. The bones are solid, without any vascular holes. It is of an ivory texture. At the edges of the bones, fibres diverge from the centre of each towards its commissure ; they are particularly remarkable at the anterior parts of the parietals, which meet together. The orbital processes of the frontal bone are not depressed, but form an obtuse angle with the superior parts of the bone. The orbits are greatly increased from below upwards ; the supercilium is carried much upwards and forwards beyond the lower part of the orbit, and the frontal bone projects much over the face. The frontal bone is in one piece.

A large membranous expansion, two and a-half by nine inches, exists between the frontal and parietal bones, the interval is occupied by two large *ossa Wormiana*, in the angle between the parietals, and by several smaller ones.

The parietal bones at their anterior part meet for the space of two inches, while for five inches posteriorly they are joined by membranes two inches and a half in breadth. The lower part of this division is closed by *ossa Wormiana*, which are in apposition with an innumerable number of the same bones, filling the lambdoid suture, which is two inches in breadth. A few of these bones also exist between the squamous portion of the temporal and parietal bones.

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* Loc cit., . 518. † Loc cit., p. 40.

Examined on the inside, all trace of suture between the frontal and parietal bones, sufficiently distinct on the outside of the skull, has disappeared. Even the Wormian bones in the lambdoid suture scarcely present a trace of suture in the inside, though on the outside they are distinct enough. This gives a confirmation of the views of Craigie and Breschet with respect to the consolidation of the bones in chronic hydrocephalus.

That this case was not, however, one of congenital hydrocephalus, would appear from the orbital plates of the frontal bone remaining undepressed. In the congenital form, these plates, as in the skulls preserved in the Rotundo, form a continuous curve with the superior part of the frontal bone.

The size of the head has been observed very great. Meckel states that he had seen a fœtus of seven months, the transverse diameter of whose head was sixteen inches. The head of another fœtus, come to its full time, was, at birth, fifteen inches in circumference, and five inches in height. Another, by Willan, at twenty months, was twenty-eight inches in circumference, and nineteen from ear to ear;[1] by Friend,[2] at two years, it was twenty-nine inches. A head, in the museum of the Rotundo, Dublin, is stated to have been twenty-two inches in circumference when the mother was delivered by the crotchet. Wrisberg delivered a Jewess with the crotchet, and the child's head was ten inches long, and thirty and a-half in circumference. Dr Monro's, at nine years, was thirty-six and a-half inches.[3] The head in Bartholin's case was forty-eight;[4] in Cruickshank's, at sixteen months, fifty-two inches in circumference. This is the largest head I have met a description of, with the exception of Marcorel's case, in which the head, according to Meckel,[5] was, however incredible, twenty-eight feet round! Meckel's words are—"Der von Marcorel beschriebene Schädel, der von acht und zwanzig Fuss in umfange hatte, war weich und sehr dünn."

The quantity of fluid found in hydrocephalic heads is also very considerable. Willan, in a child aged twenty months, found four quarts; Ecmark, eight pounds,[6] and Duncan,[7] eight pounds, eight ounces; Wrisberg,[8] in the Jewess's child, nine pounds; Buttner, twenty pounds; Stegman, twenty-four pounds;[9] Cruikshank, twenty-seven pounds; Esquirol, thirty-six pounds;[1] and Lechel, fifty pounds.[2]

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[1] Breschet, l. c., p. 514

[2] Phil. Trans.. No. 256.

[3] Annals of Medicine, Vol. iii., section ii., p. 365.

[4] Medical and Physical Journal, Vol. lvi., p. 87.

[5] Patholog. Anatomie, T. i. p. 285.

[6] Sandifort Thesaur. Dissertat., T. ii., p. 327. Rotterd, 1669.

[7] Transact. Medico-Chir. Society, Edinb., Vol. i. p. 205.

[8] Satz. Zeit., 1805. Bd. i. S. 89.

[9] Miscell. Cur. Dec. iii., An. i.

Forestus, J. P. Frank, Stoerck, Girtanner, Plenck, Sprengel, Feiler, Goelis, Rudolphi, and others, haverecognised the existence of hydrocephalus in the embryo, and in new-born children. Richter says, "this disease can only form in children, and the small number of adults in whom it is observed have been affected with it from their earliest age."[3] Boehmer and Wigand assume that children are born disposed to this disease, and it is often developed, according to Rosenstein, Struve, and Loder, a few days or months after birth.[4]

Hydrocephalus generally proves fatal soon after birth, but it does not always carry with it the idea of the near death of the individual.

Dr West says, "on examining the date of the commencement of the disease in fifty cases (fourteen of which came under my own observation, and the remaining thirty-six are recorded by various writers), that some symptoms of it were observed in forty-six cases before the child was six months old, that in twelve of them the malady was congenital, and that in nineteen more it came before the completion of the third month."[5] I have notes of thirty cases aged from six to seventy-nine years. Hartell and Malacarne give one each, aged seventeen years; Loder, twenty-two; Buttner, thirty-one; Schneider, forty-three; Ecmark, forty-five; Schomberg, forty-eight; Gall, fifty-four; and two by Goelis, aged seventy-one and seventy-nine years.

Chronic hydrocephalus is not constantly a fatal disorder. Cardinal died of fever and diarrhœa at twenty-nine years of age; Dr Fourçade's[6] patient, of pneumonia; Dr Lee's,[7] of cholera; one of Conquest's cases, of pertussis; Dr Banks',[8] of phthisis, at the age of thirty years; and Dr Dickinson's, of bronchitis,[9] &c.

Dr Monro states, "I have endeavoured to prove that there is not only a mere extension of the brain in chronic hydrocephalus, but also an absorption of part of its substance."[10] Against this Dr West says, "it was long supposed there was a real destruction of cerebral substance in these cases, and that the brain had actually melted down, as it were, beneath the encroachments of the fluid. This opinion was the more readily entertained, from the circumstance, that the attenuated brain often gave way under examination, and the relation which the different parts had actually borne to each other was thus involved in hopeless confusion. It has been ascertained, however, that this was a mistaken notion, that the cerebral substance is simply unfolded, not destroyed."[1] Whether this be correct or not, it is difficult to say, but it would appear to me not improbable that in cases in which the brain is found to be undeveloped, as in the four cases I have given, a deficiency of the amount of brain would be detected. Meckel remarks, "the substance of the brain in hydrocephalus appears to be remarkably smaller than natural."[2] At all events, I cannot agree with Billard that an hypertrophy of the brain is ever found to exist in chronic hydrocephalus.[3]

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[1] Gaz. Medicale, Janvier 24, 1835.

[2] Meckel, loc. cit., T. i., p. 272.

[3] Bibliotheque Germanique, T. viii., p. 375.

[4] Breschet, loc. cit., p. 510.

[5] Diseases of Children, p. 84.

[6] Lancette Fran., Vol. iv. p. 188.

[7] Stewart on Diseases of Children, p. 353.

[8] Dublin Medical Journal, N. S., Vol. i., p. 514.

[9] Mr Dickinson, in a private note, informs me that the age of his patient was thirteen months, and not years, as printed in the Lancet.

[10] On Hydrocephalus, p. 134.

Dr West also says, that even when the walls of the ventricles are not above two or three lines in thickness, the two layers of white and grey matter are still distinctly perceptible; and this is also Klein's opinion. Breschet, however, states he never saw them distinct. "I can, on the contrary," says he, "affirm, that in most hydrocephalic subjects examined by me, the cerebral substance had a uniform colour, and that there was not either a distinct medullary, nor cortical or grey substance to be seen."[4] In the four cases examined by me there was distinctly a medullary and cineritious layer observable.

What, then, is the cause of congenital chronic hydrocephalus? The imagination of the mother has been assigned as a cause, as well as her chagrins, frights, and passions,—her diseases,—her debility,—the age of the father,—an hereditary disposition. J. P. Frank attended a woman in her confinement seven times, and each time she produced a hydrocephalic child. Goelis gives a similar case. Drunkenness of the parents, the compression produced by stays, and the means for concealing pregnancy, are also said to produce it. This is certain, that hydrocephalus and other faults of conformation are much more common in the children of unmarried girls than in those of married women.

It will, I think, appear that congenital chronic hydrocephalus is always dependent on faults of conformation of the brain.

Chronic hydrocephalus, says Meckel,[5] appears to me to be in most, if not in all cases, the result of an arrest of development of the skull and of the brain. The state of the brain, the condition of the bones, and the form of the head, in general, indicate the most prominent grounds for this opinion. But it is besides countenanced by the circumstance that this disease appears always to be congenital, that it presents itself under conditions which appear to favour arrests of organic development; and, finally, its common union with other analogous vices of formation. Morbid alterations, depending on a change from the normal to the unnatural, are in the fœtus of so rare an occurrence, that in one hundred fœtuses opened by Meckel, in not a single one did he find anything of a like disorganization. Hydrocephalus, therefore, made so much a more striking exception, inasmuch as other dropsies are much more infrequent.

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[1] On Hydrocephalus, p. 87.
[2] Path. Anat., T. i., p. 271.
[3] Maladies des Enfans, p. 592. Paris, 1828.
[4] Loc. cit., p. 519.
[5] Loc. cit., p. 262.

But hydrocephalus appears in fact to be always congenital. The period of its origin is always the earliest time of life; and when it is occasionally developed some years after birth, this circumstance does not prove that notwithstanding the brain was originally formed natural, inasmuch as Monro has remarked that children in whom the disease appeared two years after birth had yet the bones of the head separated far asunder before that period, and during their entire life.

In effect all observers agree in this, that in ventricular hydrocephalus the brain represents a thin membranous bladder filled with fluid whose quantity varies according to the stage of the disease, and which, by its form and structure, appears to indicate at one time a more early, at another time a later, period of its development.

There is a circumstance, says Breschet,[1] to which I shall direct the attention of physicians, and which appears to explain the frequency of serous intracranial effusions in general, and especially of congenital hydrocephalus. The fine researches of M. Magendie on the cerebro-spinal fluid leave no doubt of the existence of this liquid at all periods of life, intra-uterine and extra-uterine, and its abundance as well as its constancy appear to demonstrate that this liquid performs important functions. Here, then, is a natural hydrocephalus, or one which is united with the regular performance of the functions of the brain and spinal cord. The study of organic evolutions has caused this liquid to be recognised as more abundant at the first period of the formation of the cerebro-spinal nervous centres than at any other epoch of life. From the existence of this liquid, from its more considerable quantity, during the first phases of life, to the existence of hydrocephalus there is but a degree. Hydrocephalus must happen more easily and more frequently than hydrothorax, hydropericardia, &c., because in these cavities liquid is not found in the normal state, as in the cranial cavity. In confirmation of these views, I may mention that it is stated by Dr Todd,[2] that "where an arrest of development of any portion of the cerebro-spinal axis has taken place, the space which ought to be occupied by the organ of imperfect growth is filled with liquid." This statement, however, is not universally true, as Mr Paget[3] and Mr Mitchell Henry[4] have each given a case, in neither of which is any mention made of water in the brain, yet there was in both a great deficiency of the *corpus callosum*, *fornix*, and *septum lucidum*.

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[1] Loc. cit., p. 511. [2] Cyclop. Anat. and Physiol., Part xxv., p. 642.
[3] Med.-Chir. Transac., Vol. xxix., p. 55. [4] Ibid., Vol. xxxi., p. 239.

I can affirm, says Breschet, in consequence of the many bodies examined by me at the Hôpital des Enfans Trouvés, that in the fœtus, in children come to their time, and in those aged from six months to one year, a true hydrocephalus of the anterior and median, or ventricle of the *septum lucidum*, is met with. This ventricular cavity, so well described by the brothers Wenzel and Tiedemann, is so much larger as it is examined at a period near the formation of the brain, and it always contains serosity. A constant anatomical structure should not be considered a disease, but only as it may more or less dispose to a pathological state. This proposition, deduced from anatomy and pathological physiology, is countenanced by many well proved facts.[1]

Shall we place the accumulation of liquid in the ventricle of the *septum lucidum* amongst chronic hydrocephali? Certainly not, since it is a constant state, belonging to the development of the organ. But when this serosity becomes more abundant than in the generality of cases, then may we consider this liquor as forming a new species of hydrocephalus? It is a point as yet but little known and to which I invite the attention of anatomists and practitioners.[2]

The middle parts of the brain being formed later than the lateral parts, the walls of the *septum lucidum* are very much separated, and between them is still found much serosity when all that of the lateral cavities has been absorbed, and when the ventricles of the cerebral hemispheres have their walls already contiguous.[3]

Breschet has given the results of his dissection of several cases, from which he concludes that internal hydrocephalus must always depend on some defect of original conformation. He remarks that in the first periods of fœtal life, the lateral ventricles are veritable cavities filled with liquid, and it is only by the absorption of this liquid, and by the secretion of cerebral substance between the two layers of the arachnoid, that the ventricles become cavities with contiguous walls. It also appears, that in all the cases he examined the parts were so much more imperfect in their development as one advanced from the posterior to the anterior parts of the brain. The organs placed laterally almost all existed, although imperfectly, whilst those in the median line were absent altogether, or scarcely traced out (*à peine ebauchées*). The commissures were not visible, which appears to confirm the proposition that the parts of the brain proceeding from the divergent fibres have a more precocious development than those belonging to the convergent fibres or the system of commissures.[4]

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[1] Loc. cit., p. 510.
[2] Ibid, p. 528.
[3] Breschet, loc. cit., p. 529.
[4] Loc. cit., p. 524.

Dr Duncan, Jun.,* has given a description of a very interesting case of bifid or cleft brain. The infant, a female, was born hydrocephalic; it lived seven months, and was seen by many other practitioners. When Dr Duncan first saw her she was aged five months. The countenance and other parts of the body were emaciated. All her functions appeared natural. She took no food but the breast milk, but this with the usual avidity. On account of the weight of the head she could never sit up, yet she was sometimes lively, and evidently received pleasure from being played with. The external senses appeared entire. In a fortnight after, the circumference of the head was twenty-nine and a-half inches; from the tip of one ear to the tip of the other, sixteen and three quarter inches. Her head was translucent.

On dissection, the *dura mater* was natural, but the falciform process was greatly larger. The cranium held eight pounds eight ounces of fluid. Those surfaces of the two hemispheres of the brain which are usually applied to the falx were separated from each other about four inches, except within an inch of their anterior extremities, where they remained united in the natural manner. The *corpus callosum* was wholly wanting except two white bands which stretched across between the anterior horns of the ventricles, nearly parallel to each other; they were about a quarter of an inch apart, and each of them was from an eighth to a quarter of an inch broad. There was no fornix, nor *septum lucidum*, nor the least appearance of the anterior commissure of the brain. Neither was there a choroid plexus. All the nerves were entire. There was no absorption of the substance of the brain. The enlarged ventricles formed one common cavity with the parieties of the cranium.

One of the most interesting circumstances, says Dr Duncan, regarding the progressive formation of the fœtus, and which has a great share in explaining the malformations commonly observed, and, if I mistake not, explains the case which has led to these observations, is the formation of the fœtus in two lateral halves, which at first are quite unconnected. When the development of the organisation is regularly progressive, these distinct halves soon unite perfectly; but when their union is partially interrupted, a variety of malformations is generated, which are often manifested by the exposure of organs that ought to have been covered.

As examples may be quoted all fissures of the anterior and posterior surfaces of the body, the exposure of the organs of the chest or abdomen, of the spinal marrow or brain, hare-lip, fissure of the palate, exposure and fissure of the urinary bladder, separation of the *ossa pubis*, double uterus, vagina, &c. A detail of these would fully establish Meckel's opinion, but it is necessary to confine these observations to the illustration of the present case, and to those circumstances which bear upon it.

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* Trans. Med.-Chir. Society, Edinburgh, Vol. i., p. 205.

In an early stage of the growth of the fœtus the ventricles of the brain are not closed, and they resemble, remarkably, the state of the hemispheres in the head of the present case. It is impossible not to be struck with the resemblance to this case of the state of the parts described by Tiedemann in his account of the brain of an embryo of the twelfth week. He says, " The hemispheres of the brain are uncommonly small in proportion to the parts already described (*i. e.* the cerebellum, and especially the *corpora quadrigemina*), for they are only four lines long, five broad, and three high. Properly speaking, only their anterior lobes are as yet formed, for the middle and posterior lobes present only two very short appendices, rounded posteriorly, and lying before and to the side of the *crura cerebri.* From this scanty formation of the hemispheres it will be understood how parts which, in the adult brain, are covered by the brain, lie here exposed and uncovered,—such as the *corpora quadrigemina* and cerebellum. The surface of the hemispheres is everywhere smooth, and shows no sulci nor convolutions. The two hemispheres are on the upper side deeply divided longitudinally, and into the fissure the falciform process of the *dura mater* enters, which as yet is tender and projects but little. When the two hemispheres are separated laterally from each other, we observe at once the thalami of the optic nerves and the *corpora striata*, for as yet there is no *corpus callosum*, and no fornix formed. The two hemispheres are connected only anteriorly, constituting the commencement of the *corpus callosum.* The hemispheres are evidently two hollow membranous sacs, whose parietes are scarcely one quarter of a line thick. If we continue cautiously their separation, we can turn them entirely sidewards and unfold them into a membrane, so that the cavities of the ventricles and the eminences in them are exposed."[*]

After describing the progress in the formation of the hemispheres until the maturity of the infant, Tiedemann thus concludes: " From all this it appears, that the formation of the hemispheres proceeds from the sides and from before; that they were originally a thin medullary membrane, turned inwards and backwards; that they gradually increase in size and thickness; and that in the same proportion they stretch from before backwards over the *corpora striata*, the thalami, the *corpora quadrigemina*, and, lastly, over the cerebellum, and cover these parts."[†]

The *corpus callosum* does not exist in the brain of the human embryo during the first months after conception. It is towards the end of the third month that the two membranous hemispheres are first connected anteriorly by a small, narrow, almost perpendicular commissure, while, in the middle and posteriorly, they are so entirely distinct from each other that the thalami and third ventricle are seen when they are drawn aside. In the fourth and fifth month it is still very thin, and has an almost perpendicular situation. In the sixth month, the hemispheres have extended considerably backwards, and assumed a horizontal position, and covered the anterior part of the thalami. In the seventh month it lies perfectly horizontal, and covers the thalami and the third ventricle. In the eighth it not only covers the thalami perfectly, but stretches to the *corpora quadrigemina.*

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[*] Anat. &c., des Gehirns im Fœtus. P. 20. Nurnberg, 1816.

[†] Ibid., p. 143.

Enough has been adduced to show that the state of the malformed parts, in this singular case, corresponds very exactly with their natural state in a fœtus of the third month,—whether a hydropic action of the serous membranes of the brain was the cause of the arrested progress of its development, or whether the unnatural arrangement was the cause of the increased serous effusion, cannot be easily decided; but after the dropsy became considerable, in such a state of the parts the effect would naturally be to expand and distend the skull and the membranes lining it; while the hemispheres, attached by nerves and vessels to the basis of the skull, and to the cerebellum and *medulla oblongata*, would be confined to the lower part, and be thrown outwards along with the temporal bones, which by distension were rendered almost horizontal, so as to give the appearance represented by Tiedemann, when the hemispherical membranes of the early fœtus were artificially separated.

Dr Remmett* has given a similar case, which he punctured several times. The whole cavity of the cranium was full of a clear pellucid fluid, of which there were two quarts. The *dura mater*, with its processes, were entire, but he could not at first discover any appearance of brain. After the most minute examination, he could only trace the *medulla oblongata* descending into the spine, and behind the orbits of the eyes a very small quantity of medullary substance indistinctly resembling that of the brain. Similar cases, which were also repeatedly punctured, are recorded by Glover, Whitemore, Sym, Armstrong, Kilgour, Loftie, and Dickinson.

Whatever, then, may be its remote cause, we may, I think, conclude with Meckel, Breschet, and Duncan, that congenital chronic hydrocephalus depends on an arrest of development of the brain, or, according to Mr Anderson and Dr Carte, of the proper brainy material.

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* Edin. Med. Commentaries, Vol. vi., Part i., p. 422.

In the forty unsuccessful cases of tapping, given by Dr West, along with Lizars' case, making forty-one in all, the brain was so disorganized that no account could be given of it in six cases. In seventeen there was no account of its state, and a very imperfect one in three cases, while in fifteen it was decidedly defective.

In eleven cases unnoticed by Dr West, given by Jeffrey, Dickinson, Loftie, Dendy, Bellingham, Woodroffe, Fergusson, Watson, and Taylor, there was either no *post mortem* account of the brain, or a very imperfect one in seven of them, while in four it was decidedly defective.

For other authors who have described cases in which the brain was defective, I shall refer to Kerkringius,[1] Morgagni,[2] Baster,[3] Duncan, Bright, Craigie, Paré,[1] A. Duncan, Jun., Klein,[4] Breschet,[5] Cruveilhier,[6] Allan Burns,[7] Wepfer,[8] Bonetus,[9] Béclard,[10] Duverney, Tauffer, Carlisle, Bianchi, Reed,[11] Jeffrey,[12] Howship, Chatto, Solly, Reil, Baron, Miller, Ecmark, Wrisberg, &c.

My own dissections fully confirm this view of the state of the brain in chronic hydrocephalus, notwithstanding it is opposed to Dr West's assertion that "congenital hydrocephalus is usually, though by no means invariably, associated with malformation of the brain."[13] It should be remembered that malformation of the brain existed in all the cases given in my former paper, while in case No. 4 the fluid was quite unconnected with the ventricles of the brain.

It is difficult not to feel one's self guilty of presumption in differing from Cruveilhier,[14] who says, "hydrocephalus exists with a perfect integrity of the brain. There are even circumstances in which the serous fluxion, directed upon the ventricular membrane, is accompanied with hypertrophy, more or less considerable, of the substance of the brain." The question of the perfect integrity of the brain has been already settled; as to hypertrophy of it, first promulgated by Billard, I have been unable to discover a single case of it in connection with hydrocephalus.

The history of the development of the brain, thanks to Carus, Tiedemann, and Döllinger, is at present sufficiently advanced to enable us to look on those with a single hemisphere as the effect of the destruction of the *septum lucidum*, and of the malformation of the cerebral commissure. The organic disposition of which Bianchi and Carlisle have spoken, are to be attributed to a deformity produced by the presence of liquid in the lateral and third ventricles. The former found in a child, seven years old, a single cerebral cavity, in which were to be seen confounded the *corpora striata* and optic thalami. The conarium and choroid plexus were wanting, as well as a part of the *medulla oblongata.* The *tubercula quadrigemina* and cerebellum were natural. The brain was formed of cineritious substance only, the medullary being generally wanting. There was no trace of *septum lucidum* nor of the *corpus callosum.* In a woman, aged twenty years, Carlisle found the brain unilocular, and the *corpus callosum* scarcely apparent. In this subject the intellectual faculties offered nothing particular, whilst in Bianchi's case there was perfect idiotcy.*

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[1] Boneti Opera, Vol. iv. p. 309. Geneva, 1679.

[2] De Caus. et Sed. Morbor., Epist. xii.

[3] Philos. Trans., Vol. ix., p. 235.

[4] Dissert. de Rachit. Congen. Strasbourg, 1763.

[5] Loc. cit., p. 525.

[6] Anat. Pathol., Livrais. xxxix. 1836. Liv. xv. Planche iv.

[7] Monro on Hydrocephalus, p. 31.

[8] Opera, p. 49, &c.

[9] Sepulchret. T. i. p. 394.

[10] Breschet, loc. cit., p. 525.

[11] Edinburgh Medical and Surgical Journal, Vol. xi. p. 453.

[12] London Medical Repository, 1822.

[13] On Diseases of Children, p. 83.

[14] Anat. Pathologique, Livr. v.

I shall now proceed to show the manner in which external hydrocephalus was produced in the cases recorded of it in the writings of British practitioners. Dr Monro says, "An anatomist, reasoning *a priori,* would be apt to suppose that the water in *hydrocephalus internus* should be as often found immediately within the *dura mater,* between it and the outer surface of the brain, cerebellum, and spinal marrow, as within the ventricles of the brain. Experience, however, proves that it is generally collected within the ventricles; and as I have not met with a single instance in which the water was entirely on the outer side of the brain (although I am far from doubting the possibility of the fact), I cannot help suspecting that this happens much more rarely than is supposed by authors, and that in many cases, supposed to have been of this kind, the brain had been lacerated in opening the cranium, and the water by that means had become effused on the surface of the brain."† In not one of the recorded cases was the fluid originally external, except in La Motte's‡ case, in which it does not appear whether there was or not a *post mortem* examination.

Dr Craigie's remarks on this subject are very deserving attention.§ He considers the inner surface of the ventricles to be the original situation of the fluid in chronic cerebral dropsy, and states that there are two cases in which it may get out of that situation, and insinuate itself between the outer surface of the brain and the *dura mater.*

The first is where the process of serous effusion commences at a period so early in fœtal existence that it precedes the full development of the brain, suddenly arrests the process of development while the *pia mater* and choroid plexus communicate freely, and prevents at some point of the mesial plane cerebral matter from being deposited. He refers to the development of the brain of the fœtus as detailed by Tiedemann, and says, "if, therefore, by any cause, the process of serous effusion should commence at this period, it is manifest that whatever fluid was poured forth within the ventricles would easily find its way to the exterior surface, and that, as its presence arrests the further growth of the hemispheres, their internal or mesial margins would remain apart till the death of the individual, and in this state would be found on inspection." Dr Craigie gives no examples to illustrate these views; but they are confirmed by the cases, just mentioned, of Glover, Whitmore, Sym, Armstrong, Kilgour, Loftie, and Dickinson, as well as those by Howship, Chatto, Reil, Ecmark, Solly,* and Wrisberg.†

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* Breschet, loc. cit., p. 529.

† On the Brain, the Eye, and the Ear, p. 33. 1797.

‡ Traité complet de Chirurg. T. i. Obs. 115.

§ Loc. cit., p. 22.

Mr Howship's‡ case is that of a man twenty-five years of age, with an immense enlargement of the head, being twenty-five by fourteen inches. His appearance and manners were those of an idiot, but his faculties were, notwithstanding, in some respects, by no means deficient. The hydrocephalus was congenital. At two years of age he fell down stairs, and from that time had been subject occasionally to fits of slight epileptic convulsions. He was conscious of having water in his head; a peculiar rotatory motion of the head, stooping it forwards and turning his face alternately from side to side, prevented, as he said, the water from giving him pain. The poor fellow had generally the power of giving a rational answer, and when asked how he did, would sometimes complain of pain in his head. His sight was generally perfect; his hearing and appetite good. In disposition he was vindictive and spiteful on the least occasion. For several years (during which he had been an inmate of a workhouse) he had been allowed the care of a large hand-bell, that was rung morning and evening every day. His constant and strong attachment to this bell frequently proved the source of much amusement to his companions.

At the *post mortem* examination the cranium was found remarkably thick, but towards the vertex diaphanous. A thin vesicle or bladder, like a very large hydatid, was pressed up from between the hemispheres of the brain, and exactly over the usual position of the *corpus callosum*. This vesicle being cut, a very large quantity of serosity flowed off. The remainder of the fluid in the ventricles amounted to three pints and a half. The coat of the vesicle proved to be the extenuated substance, and was all that remained of the *corpus callosum*. The fornix and *septum lucidum* were deficient.

Mr Chatto's§ case died aged one year. In all its life it manifested no sign whatever of recognising persons or objects. Upon division of the membranes a considerable quantity of fluid escaped. The source of this was not at first obvious, but as the incision into the *dura mater* was made near the point where the two hemispheres come in contact, " I doubt not," says Mr Chatto, " it followed this separation; in fact, upon stretching these asunder, we looked at once into the cavities of the ventricles,—the *corpus callosum,* fornix, and *septum lucidum* being absent, except two small slips of the first, lying between the anterior portion of each ventricle."

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* Medical Obs. and Enquiries, Vol. v., p. 121. † Saltz. Zeit., 1805, p. 89.

‡ Practical Observ. on Surgery, p. 79. London, 1816.

§ Medical Gazette, January 10, 1845.

In the case recorded by Mr Solly,[*] the patient was aged seventeen years. He died seven days after a fall, in which the base of his skull was fractured. His mother never considered him right from his birth. He sometimes talked pretty rationally, but generally, to use his mother's expression, he was *boobified.* He was childish in his amusements, very good-hearted, and willing to do all that was required of him. It had always appeared difficult to him to maintain the erect posture, and he used to tumble and roll about. He had been from infancy unable to hold up his head, and generally appeared drowsy.

On examining the brain, there was seen in the place of the *corpus callosum* a pale, semitransparent, membranous cyst, attached to the left hemisphere, forming part of the roof of the left lateral ventricle, and protruding into the space between the hemispheres. The cyst was formed of thin membrane. It measured two inches in length and one in breadth, and contained about an ounce of limpid fluid. The *corpus callosum* was wholly absent; the third ventricle was covered by only a thin membrane, probably the velum; the middle part of the fornix was absent. Both lateral ventricles were very much enlarged, and contained about four ounces of fluid.

A case recorded by Reil[*] is interesting. A woman, thirty years of age, an idiot, of good constitution, and frequently employed by the inhabitants of her village in trifling commissions, fell suddenly backwards and died. On opening the head, the *corpus callosum* presented a solution of continuity the whole length of its middle portion, or rather this middle portion was altogether wanting, so that the optic chambers were completely exposed, and the two hemispheres solely united by the *commissura mollis,* the anterior commissure, and by the *tubercula quadrigemina.* The *septum lucidum* was also wanting. The ventricles were moderately full of water.

The second case, in which, according to Dr Craigie, the fluid might be found on the outside of the brain as well as the inside, is when the process of effusion has advanced to such an extreme degree as to lacerate the upper and most attenuated part of the hemispheres. He confesses himself ignorant of any unequivocal case of this mode of termination, of which the following are examples.

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[*] The Human Brain, p. 433. London, 1836.

[†] Reil and Autenreith's Archiv. für die Physiologie, Vol. xx. p. 341.

It is yet proper to remark that Monro (although not correct in the explanation he has given of it) acknowledged a similar termination of hydrocephalus. He says, the water is found on the exterior of the brain in consequence of the rupture of the ventricles; and assumes that it is there always first found, and is contained in the ventricles, where only two or three pounds of it are secreted; but it is, on the contrary, found between the *dura mater* and the skull whenever its quantity exceeds five pounds.*

Cardinal lived to his twenty-ninth year. His hydrocephalus was congenital. He was unable to walk alone until he was six years old, and then only on a level surface; if he attempted to run or stoop, he fell down. His appetite was ravenous. The bones of his head were not closed until two years before his death; he was not altogether firm on his feet, but sometimes tottered a little and required support; there was something childish and irritable in his manner; his voice was not manly, but feeble and somewhat hoarse. He was fond of being noticed, and especially pleased by the assurance that his head was growing larger.

Six or seven pints of a clear and transparent fluid were found within the *dura mater*, and one pint in the ventricles. "It soon, however, became obvious, that what we saw looking like the flattened superior surface of the two hemispheres was, in fact, the two lateral surfaces, which in health are opposed to each other. These had been separated and thrown back by the pressure of the fluid, which, having first accumulated in the lateral ventricles, had forced a preternatural opening on one side of the *corpus callosum*, which, together with the fornix, had been nearly obliterated."†

Baron's‡ case is similar. A child was affected with congenital hydrocephalus, and died, aged eighteen months. The head was twenty-eight inches in circumference. This child was affected with a swelling at the top of the head, over the posterior fontanelle, which in a week's time acquired the size of a goose's egg. The size of this was affected by a constant dribbling of water from the urinary passage, and the scalp fell in large wrinkles over the child's forehead, so as actually to cover the eyes. At a later period fluid came from the nose, causing a subsidence of the swelling of the head. At the inspection, a little to the right of the falx, the *dura mater* was found ruptured, as was demonstrated by a well-defined circular opening, nearly an inch in diameter, which communicated directly with what was the external tumour and the interior of the brain. Through the opening were evacuated three or four pints of fluid contained in a bag formed by both hemispheres of the brain. The expansion of the brain was so great, that round the margin of the opening it did not exceed the thickness of a shilling, and under the opening it had entirely disappeared, proving that it had given way where the *dura mater* yielded, and allowed the fluid from the internal cavity to escape into the outward swelling. A probe was easily passed through the ethmoid bone into the nose.

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* On the Brain, the Eye, and Ear.

† Bright's Reports, Vol. ii., Part i., p. 431.

‡ Medic. Chirurg. Trans., Vol. viii., p. 51.

Mr Millar's case,* though imperfectly given, as no account is given of the way in which the fluid got out of the brain, appears to be similar. A young man died, aged sixteen years and a half. The circumference of his head was thirty-one inches. He used to sit by the fire in an elbow chair, with a board crossed before him, of sufficient height to support his head. His reasoning was good; the mental faculties perfect. For the last two years of his life, some water, to the amount of one or two ounces daily, used to drop from his nose. The features of his face corresponded to the size of his cranium.

On examination after death, the bones of the skull were found perfectly firm and completely united, although very thin. The ventricles were like large pouches, and contained eight pints and a half of fluid, which was in contact with the skull, the *dura mater* being absorbed and diseased. The body was deformed by rickets. A considerable quantity of bloody serum flowed from the spinal chord on the body being raised. The brain was but three quarters of its natural size, and was diffluent and pulpy. There was a foramen an inch above and to the right side of the *crista galli* process, communicating directly with the nasal cavity, and allowing the passage of four bristles.

A third form of communication between the ventricles and the cavity of the arachnoid is where the deficiency does not exist in the mesial plane, but laterally, as in two cases given by Cruveilhier. In one† of these, both the anterior hemispheres of the brain were deficient and open anteriorly, the right one in addition laterally. In the other,‡ the left middle lobe was absent, by which a communication was effected between the lateral ventricle and the cavity of the arachnoid, which was filled with fluid.

In case No. 4 by me, it may be remembered, at the anterior part of one hemisphere, for the space of one inch square, there was no cerebral substance separating the fluid contained in the brain from the cavity of the arachnoid, in fact nothing but a layer of this membrane.

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* Med. Chir. Trans. Edinb., Vol. ii., p. 245.

† L. c., Livr. viii., p. 6.

‡ L. c., Livr. v., p. 5.

A similar occurrence was remarked in several of Mr Smith's cases, but in none of them, he states, was the fluid in the cavity of the arachnoid.

With regard to the intellect of hydrocephalic patients, we find Dr Monro stating, "it is incredible how little the powers of the mind are impaired by this disorder, considering the great enlargement of the ventricles of the brain. I have had opportunities of seeing several examples of this form of hydrocephalus, and have watched the progress of the symptoms for years, yet I have never met with any one instance in which the powers of the mind could be said to be completely deranged."* This opinion, so entirely subversive of phrenological doctrines, is, however, not universally correct. Dr Watson says, "most commonly the mental and voluntary functions are maimed or perverted;" and this we find the case in the cases already quoted from Howship, Solly, Chatto, Reil, and Cardinal's case, as well as those given by Dr Craigie, Ecmark, Schmitt, and Ryan. Dr Donald Monro remarks, there are few cases where the unhappy patients have preserved their faculties entire, when the head has become large.†

The following case is by Dr Craigie.‡ A woman died, aged twenty-one years, with an unusually large hydrocephalic skull. It was of a natural size at birth, and was firmly ossified at twelve years of age. This woman, who was unable to manage her skull, had the free use of her hands, yet never could walk, but moved her legs by raising them one over the other. She was irascible, susceptible of pity, she had a good memory, and distinct ideas of right and wrong.

Ecmark's patient, who died at forty-five years of age, was affected with congenital hydrocephalus. She could never raise her head, nor stand, and was continually in bed. She could not turn nor feed herself. Her face was smiling, her mouth gaping, with saliva flowing from it. Her speech was indistinct, and she continually exhibited a sort of fatuity. She had learned one or two short prayers, but had never learned to read. Her face, neck, and thorax were of a childish form. The *dura mater* adhered so to the skull, that, in dividing the former, a great quantity of fluid escaped. There were no anfractuosities on the brain, which was but a line in thickness.

Michaelis's§ case is interesting. The patient was aged twenty-nine years. His head began to enlarge three weeks after birth. He entirely lost the use of his limbs, a slight motion of the arms alone excepted. He was never able to quit his cradle unless assisted by three or four people. As he never made use of his feet, they remained extremely small, and looked like those of a boy of twelve years, forming an odd contrast with the rest of his body, which was as large as that of a full-grown person. His appetite and hearing were both good. His sight was imperfect, and he squinted. His mental faculties were not contemptible, though he was generally considered an idiot on account of his looking so very stupid. His spirits were always good, and he was glad to see people. His smiles were hideous, and his shrill voice the most disagreeable I ever heard, says Michaelis. The circumference of his head was thirty-two inches. His monstrous head he was unable to move, unless assisted by others. His limbs were neither rickety nor deformed, except his left hand, which had lately become distorted, from its having constantly remained unmoved in a bent position.

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* On Hydrocephalus, p. 138.

† Trans. College of Physicians, Vol. ii., p. 358.

‡ Loc. cit., p. 41.

§ London Med. Communications, Vol. i., p. 404.

A man used to show himself at fairs, says Van Swieten,* who, from the beginning of life, had laboured under an hydrocephalus, and he was very languid, but, however, was above thirty years old. His head was of a prodigious size, though the rest of his body was not bigger than that of a boy ten years old. He had his senses, but was of dull intellect, nor could he move about much; and indeed the great weight of his head hindered him from sitting upright any long time unless he was supported by pillows placed behind.

Perfect idiocy results from congenital hydrocephalus. Dr Schmitt† says individuals affected by it have been seen to live to the age of forty years and upwards, with a more or less free exercise of their intellectual faculties. Examples of this are nevertheless rare; and they are even cited as objects of curiosity.

He gives an instance of a man, aged twenty-four years, the volume of whose head was enormous, being twenty-five inches in circumference. One could not raise it without being astonished at its weight. The rest of his body was very small in comparison with the head. Its length, with the head, was forty-one inches, and thirty-one not including it. His extremities were extremely feeble and reduced, the upper principally were paralysed and contracted. The hands rested against the external part of the forearm, the consequence, apparently, of convulsions, to which he had been daily subject for years, and the attacks of which continued about a quarter of an hour. His language was very imperfect, it only consisted of some demiarticulated sounds, only intelligible to those constantly with him. His tongue was well formed. His eyes were large and awry, and were fixed upwards. His sight very good. His mouth was of a deformed size. His physiognomy announced idiocy the most profound, and all his manner corresponded to the expression. Anger and the other passions were unknown to him. He could be made laugh with some ease, but this laugh was only a horrible grimace. His sexual organs sometimes manifested their natural movements without any emission.

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* Commentaries, Vol. xii., p. 241.

† Biblioth. Germanique, T. vi., p. 231.

The following is a parallel case.

Case 7. John Carroll, aged nineteen years, August 17th, 1849, is the second child of his parents. The first died of hydrocephalus. His head has been unusually large from birth; when in the arms of his mother it was very heavy, and the circumference is now twenty-five inches by fourteen inches and a half. It is square and even, but in front of the parietal protuberance is a rather deep depression from above downwards. When six months old he had convulsions, and has frequently had them since. He now often lies down on the floor and sleeps. Little or nothing has been ever done for him. He cannot endure any one to touch his head; when it is attempted, he puts slowly up his hand, and endeavours to scratch the person meddling with it.

His eyes do not well converge; they move slowly, but he sees well. They are not depressed, but are sunk deeply in his head. He constantly grinds his teeth, which are good, and continually grins, stretching out his hands to his father and mother.

He makes a noise in his throat, but cannot utter an articulate sound, nor stand, nor walk, unless supported, and then very imperfectly. His hearing seems very indistinct. He can sit on the floor or in a high-backed chair, in which he is supported by a strap in front. His feet and hands are of a diminutive size. He cannot feed himself, but takes meat, and whatever is going. His arms are large and fat, as well as his legs, but his feet are small.

He is clad like a woman, but cannot put on his own clothes. Is about five feet high. Is not salacious, nor does he appear to know the sex. He is withal cleanly, and gives notice of requiring to pass water. He sleeps badly at night, and is said to sing in his own way. He never cries, nor seems out of humour, even when hurt. Delights in chewing wood, but does not swallow it. He will not drink buttermilk, nor eat stirabout, and has a great desire for whisky.

Esquirol* says that idiots are often hydrocephalic, even although the cranium be small; when this is opened there are found, almost always, vices of formation of the brain.

Idiots are rickety, scrofulous, epileptic, or paralyzed. The head, too small or too large, is badly formed. Idiots are deaf, half deaf, or hear badly; they are dumb, or articulate with difficulty some monosyllables. Taste and smell are defective. They walk heavily, waddling, and are easily thrown down. Some remain where they are placed, those who walk do so without an aim. Idiots cannot direct their senses; they hear, but do not listen, they see, but do not look. Having no ideas, and not thinking, they desire nothing. They have no need of signs; they do not speak. I must here say, that almost all the idiot children I have been consulted about, sung more or less well, some air, or at least some phrases of music, although deprived of speech. This observation of Esquirol is confirmed by this case, as well as those which will be related.

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* Maladies Mentales, T ii., p. 335. Paris, 1838.

Sometimes at birth, says Bright,* and sometimes within a few weeks after the sight is lost, though the hearing generally remains acute, and as the months pass on, instead of the intellect gradually unfolding itself, the mind is almost stationary, and often the powers of the body are paralysed. Patients so affected generally lie in bed with the body and legs much bent and contracted, and lose the power of strengthening themselves; and some have entirely lost the power of their legs, and retain a slight power over their arms.

This paralysis of hydrocephalic patients is by no means uncommon. It existed in the four last cases here quoted, as it did in a case by Ryan, and in three of my own cases. I lay more stress upon it, as it is unnoticed in the works of Maunsell and Evanson, Rilliet and Barthez, Barrier, West, and Churchill on Diseases of Children.

Dr Ryan† saw, at Limehouse, a case of a child, aged six years, which was affected with congenital hydrocephalus. It was nearly deprived of the functions of vision, hearing, taste, smell, and touch, and entirely of the power of motion. It was supported in a chair with pillows, and its chin rested on a bar, without which the head could not be kept in the erect position. The eyelids were partially closed, the hearing was very dull, the head very much enlarged, the forehead very prominent, and the fæces and urine were discharged involuntarily. Similar cases have been recorded by Messrs Reed‡ and Jeffrey,§ in which the brain was defective.

Case 8. Mary Carberry, aged eight years, September 1850, was admitted when an infant to the Institution for Diseases of Children. Her head was then very large, and the fontanelles widely open. Her pupils were dilated. She had convulsions almost every day, and was constantly screaming and vomiting. Her head began to be affected when she was a few months old. She became blind in two months, and so remained for four months.

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* Reports, Vol. ii. Part i., p. 424.

† London Med. and Surg. Journal, Vol. vii., p. 79.

‡ Edin. Med. and Surg. Journal, Vol. xi., p. 453.

§ London Med. Repository. 1822.

Her head is now twenty-two by twelve and a quarter inches. Its left side is larger than the right, with a raised projection between the frontal and parietal bones of the left side. There is a slight divergent strabismus of the left eye, the pupil of which is more dilated than the right, which is larger than natural. Her teeth are all sound. Has a fine head of hair. Her memory is good, and she sings well.

She has perfect use of her hands, but she cannot stand. When held up she places both feet under her, and then the legs begin to shake. Her legs are deficient in size. She can sit well on a chair, but will not creep along the floor. Her feet are constantly cold, and generally blue. Her spine is quite natural. Can raise, with some difficulty, her head from the pillow.

Case 9. Anne Woodcock, aged nine months, admitted to the Institution for Diseases of Children, 7th February 1844, under the care of Dr Croker. Is a first and only child. Her head was small at birth; it began to enlarge when she was three months old. It now measures twenty-one inches and a half by twelve and three quarters. The anterior fontanelle is largely open. Eyes are straight, unclosed in sleep; oscillation of the right eye. She cannot keep the head erect; legs very stiff and flexed; thumbs turned in; she is always very fretful and irritable; has never had any convulsive fits nor vomiting; sleeps very little in the day time; her bowels are generally confined.

I strapped, at Dr Croker's wish, the entire head with sticking plaster, and afterwards applied a roller over it.

The plaster was renewed in about a month, and was kept on the head for about two months altogether.

January 20, 1849. I was surprised to find this child still alive, and without disease, except that her head is very large, and that she cannot walk nor stand, but moves about by crawling along the floor. The development of the legs is somewhat deficient, and there is a slight curve backwards of the spine. The legs are stiff from a great degree of straitening of the flexor tendons of the hams, and they are never straight; when she is held up and asked to walk, the toes are pointed downwards. Her head measures twenty-four by fourteen inches. The fontanelles were not closed until a year ago. Forehead prominent. Her eyes diverge slightly, and seem lower than natural; the pupils contracted. Her hair is very thin and erect. Her father states, that he considers her rather silly; she talks, but takes delight in singing. Her teeth are rotting. Complains of pain in the head, while she is in the habit of lying on the bed, or floor, constantly during the day. Her feet and hands are constantly cold, but sensation in them is perfect. Her appetite is excessive. Can feed herself, having a perfect use of her hands. She can sit on the floor or a stool. She has never learned her prayers, although her parents have tried to teach her. She always gives notice whenever she desires to pass stools or urine. When lying down she has much difficulty in raising her head, which yet she always endeavours to effect. Her mother died of phthisis, about five years ago.

Case 10. Michael Morland, aged ten months, admitted to the Institution for Diseases of Children, August 8, 1842. His head is eighteen inches and a half in circumference. It began to enlarge at the age of three months, with fits, vomiting, and diarrhœa, and screeching. Has had no fit during four months. For six months the head is very large; it is much broader proportionally behind than before. The left side appears largest. Fontanelle widely open. The head is kept stiffly backwards, and cannot be held erect, it must be always supported. Is always very sleepy; expression of eyes vacant, yet he sees; thumbs always turned in; toes cramped; yawns perpetually; is wasted.

February 9, 1849. This child, who escaped my observation until now, is large and stout in his body. His legs and hands are small. The thumbs are turned in. He cannot hold a noggin or cup in either hand, but can feed himself with a crust held in his left hand. Can extend only the fore-finger of right hand. His left elbow is said to have been injured by a fall, and it is stiff, yet he uses the left hand in preference to the right. He cannot draw out either thumb from the fingers, and cannot extend the fingers properly. His legs, which, like Woodcock's, are endowed with perfect sensation, are also like them much wasted; the tendons of the hams being contracted. He cannot stand, nor even sit if unsupported, but in bed can kick about the bed-clothes. If placed on the floor in a sitting posture he would fall, he is therefore seated in a high-backed arm chair, upon the back of which his head can rest, and he is kept from falling forwards by a strap in front. He cannot even crawl along the floor. There is a bend backwards of the spine.

The fontanelle was unclosed for five years. His head is square, not immoderately large, being twenty-two inches by thirteen. Compared to its size, his face is not diminutive. The eyes have a curious expression, they are not full, and are deeply covered by the forehead. The pupils are dilated, and sluggish in their movements. His hair is thin and very coarse. Teeth all rotten. Some have entirely fallen out. Is never low spirited, is always talking, and saying something lively and amusing, grinning hideously the while. He is an excellent singer, and is said to have a fine memory. He is not sleepy, awakes in the morning before the others, and corrects the other children in speaking English. The other children, older and younger, are all healthy.

He cries when he is hurt, and cannot then restrain his passion, thus exemplifying a remark of Breschet's, that such children *rient avec extase, ou crient avec vehemence.* He is at all other times in excellent humour. He laughs immoderately on saying anything, about which he always seems to reflect previously. Is very pallid, being ever in the house. He lies frequently in bed in the day time, but does not then sleep. Can repeat his prayers well, but it is difficult to hear them. He always gives notice on occasion of desiring to pass stools or urine; when lying down, he cannot himself raise his head. He is about three feet high.

The sensibility of the legs in these cases is by no means impaired. Constipation was common to them all.

On these cases some light is thrown by the cases recorded by Cruveilhier and Smith, of atrophy or deficiency of a portion of the brain.

Cruveilhier gives a case* of idiocy, with permanent semiflexion and rigidity of the thoracic and abdominal limbs, and immobility of them, from the anterior lobes of the brain being transformed into transparent cysts with very thin walls, and containing a limpid serosity. Also another case,† in which idiocy to its greatest extent existed. It was necessary to dress and feed this unhappy patient. She could not co-ordinate her movements for walking; it was necessary to carry her from one place to another. The cavity of her head was not completely filled by brain. The anterior lobes were completely absent. A limpid serosity, contained in the cavity of the arachnoid, occupied the interval separating the exterior extremity of the brain from the frontal region of the *dura mater.* The right hemisphere was nearly the half of the size of the left. Both hemispheres were open anteriorly, and the right in addition laterally, communicating thus with the cavity of the arachnoid. He also gives cases of idiocy from atrophy of nearly the entire right hemisphere of the brain, with the transformation of this hemisphere into a cellular structure, in the tissue of which was placed a large quantity of serosity. The atrophied half of the brain of this case was in weight and volume the tenth part of the sound half. He likewise gives a case of idiocy from atrophy of the brain, and complete idiocy from absence of the left middle lobe, with a communication between the lateral ventricles and the cavity of the arachnoid.‡

Mr (now Professor) R. W. Smith has examined nearly twenty bodies of individuals affected from birth with a congenital deficiency, or atrophy of portions of the brain,—an alteration he has been always able to predict from the contracted state of the upper and lower extremities opposite the affected side of the brain.

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* L. c., Livr. xvii., P. i.

† L. c., Livr. viii., P. vi.

‡ L. c., Livr. v., P. iv., v.

With one exception the patients were all lunatics. The following is his description of that case.

A woman, an inmate of the House of Industry, died of bronchitis and pneumonia. She had incomplete paralysis and atrophy of the left arm from her infancy, with a permanently flexed condition of the arm, and of the hand on the forearm. The fingers were also flexed on the hand. Her head was small, though well formed. The left upper and lower extremities were wasted. She was endowed with ordinary intelligence, and all her senses were perfect.

Upon removing the *dura mater* the right hemisphere of the brain was found to be atrophied; the convolutions of the anterior and posterior lobes alone existed, and these were remarkably firm and hard, and exceedingly small. The convolutions of the middle lobe were for the most part deficient, and their place was supplied by the arachnoid membrane, which thus formed a great portion of the outer wall of the lateral ventricle. This cavity was considerably dilated, and filled with serum. The right was not more than one fifth of the size of the left hemisphere. The optic thalamus was not larger than a small nut, and extremely hard. Its inner edge presented a puckered appearance. The *corpus striatum*, *crus cerebri*, and *corpus mamillare* of the right side were also atrophied.*

The specimens of the other cases are all similar. The spinal cord in all of them was healthy, and in most of them nothing but a fold of arachnoid membrane intervened between the fluid in the ventricle and the cavity of the arachnoid.

Cruveilhier gives a case† similar to this. The right side was incompletely paralysed, the patient was endowed with ordinary intellect. The left hemisphere of the brain was atrophied, without any organic lesion. How, says Cruveilhier, is this fact to be reconciled with other facts of daily occurrence, which exhibit small effusions, small tumours in the brain, producing complete hemiplegy of sensation and of motion? The cause perhaps exists in the difference existing partly between atrophy of the brain by compression, and atrophy without compression, and partly between this atrophy, no matter what its cause, and solution of continuity, or the interruption of the cerebral fibres. In atrophy the instrument of our sensation and volition is doubtless imperfect; but it exists with all its constituent parts, which fulfil well or ill the functions they are called on to perform. In solution of continuity, on the contrary, a certain number of the *medullary fasciculi* of the brain are incapable of transmitting the orders of the will and external impressions;—there is a hiatus, an interval that nothing can surmount. In this case there was a deficiency of nutrition of the brain, which, he states, was as developed as possible. In

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* Dublin Medical Journal, Vol. xvii., p. 341. † L. c., Livr. viii., Planche v.

Smith's case there was absence of a portion of the brain, yet both patients were endowed with ordinary intelligence.

There are many cases of hydrocephalus in which there existed no paralysis of the limbs, and in which the intellect was not much affected; yet it does not therefore follow there was in them no deficiency of any portion of the brain. In the cases given by Mr Paget and Mr M. Henry, although the *corpus callosum*, *septum lucidum*, and the fornix were defective, there was no absolute want of any function of the brain. "It is worthy of remark," says Mr Henry,* "that my patient in several particulars exhibited a complete antithesis to the girl who fell under Mr Paget's notice. Neither of them can be said to have been of healthy mind, and yet the mental deficiency was of an opposite character in each. In the girl the peculiarity was 'vivacity and a want of caution, showing themselves in an habitual rapidity of action and want of forethought, deliberation, and attention;' whilst in the boy it was a disproportionate degree of caution and want of vivacity, showing themselves in an extreme slowness, amounting almost to stupidity."

Having now shown that hydrocephalic patients will survive for years without the operation of tapping the head being employed with them, but if they do they continue a burden to themselves and their friends, I may add I know of no remedy for so unfortunate a condition. Portal's remarks on this subject are very apposite. "What remedy," says he, "would be efficacious for curing dropsies of the brain, when, independently of the water inundating this viscus, it is disorganised in its substance, and to such a degree that it often forms nothing but a soft mass like *bouillie*, in which it is impossible to make out a difference between the cortical and medullary structures? The cautery, which has been employed for opening the cranium of a hydrocephalic child, has not had more fortunate success than the operation of tapping, and how could it? The sole sinking in by its own weight of the medullary structure (even were it quite sound) upon itself, would it not produce death? The evacuation of the water procured by the operation, would it destroy the causes which produced it, and which will again produce it?"†

Dublin, 31 *Kildare Street*.

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* Med.-Chir. Trans., Vol. xxxi., p. 239.

† Anatomie Medicale, T. iv., p. 76.

ART. II.—*Clinical Contributions to the Investigation and Treatment of General Disease; being Extension of an Introductory Lecture.* By CHARLES RITCHIE, M.D., Fellow of the Faculty of Physicians and Surgeons of Glasgow, and one of the Physicians to the Royal Infirmary, Glasgow.

IT devolves on me, as the senior physician for the time being of this hospital, to be the first to address you here, on the occasion of the opening of another winter session. In attempting to fulfil this duty, my most prominent feeling is that of cordial sympathy with you as fellow-members with me of a common profession,—committed equally, one with the other, to the vigorous, wise, and sustained performance of similar duties, and to the intelligent but patient and persevering endurance of kindred difficulties. As clinical students, you are no longer to be regarded as occupied in the acquisition of rudimentary knowledge only, but as advanced to the position of being called to test, by a process of personal investigation, the validity of the general abstract principles you already know. You are presumed to be possessed in the synthetical forms in which these are necessarily communicated in all preceptive teaching, of a knowledge of the great axiomatic truths connected with disease; and, as hospital students, you are now understood to enter on the analysis of your previous erudition, by a humble, untiring, exact, and varied reference to practical and real life. In speaking thus, I do not forget that, as clinical students, you are only, indeed, rehearsing, in indulgent seclusion, those mental efforts which the actual practitioner has to execute under the heavy and continued pressure of multiplied and diversified living interests; but neither do I cease to remember that one of the most imperative and permanent of the obligations which rest on the practitioner, is, that, however advanced in years or acquirements, he shall continue to be a student; and therefore it is that, in clinical tuition, I regard the relations of the teacher with the taught as being more properly those of a fellow-observer, than as inferring, on his part, a character which is purely didactic.

The immediate department of our profession to which this lecture is designed to be specially introductory, is Clinical Medicine, or the science of the observation, study, and treatment of internal or of constitutional disease. How obvious is it, then, at the outset, that the physician who would guide your researches in such a field as this, must himself be an assiduous inquirer, and that both he and you, in order to profit in so onerous a work, must be competent, not only as observers, but also in a capacity to attach a correct scientific import to what we do see, and also, each in our respective spheres, be able to deduce from the materials, so collected and classified, a rational and successful treatment.

It is this latter view of the subject, indeed, or the continued demand which is made on us in clinical medicine for the exercise of thought, which, whether I regard it as a practitioner or as a teacher, invests our employment in these wards, in my estimation, with its principal interest. In the former relation, I perceive in the occupant of every bed, the subject of an important species of analysis,—the materials for a succession of momentous, and sometimes profound, problems in pathology and therapeutics; and in the latter, or as having the honour to aid in guiding this department of your studies, I realise in the extended field for clinical and necroscopical observations which this hospital affords, and in the other facilities for its cultivation which are placed at our disposal, an invaluable and deeply responsible opportunity of at least attempting to train minds which must soon influence the destinies of multitudes, in such a manner as may most speedily and safely accustom you to observe and to think for yourselves.

It may form no unsuitable method of illustrating these observations, to turn at once to the realities of an actual case.

In giving a judgment on the nature of an individual example of disease, the first practical difficulty met with is the determination of its facts. These are rarely limited in medical, and especially in chronic cases, to the immediate circumstances of the attack. They extend often to the organic, the moral, and the social condition of the patient; and the observer, in conducting his examination, is guided more or less systematically and consciously by these relations. Here, then, we are supplied at the very threshold of our inquiries with an obvious general classification of the elements of the investigation into those which refer,—

1*st*, To the moral and social conditions of the patient.

2*d*, To his physical aspect and state; and,

3*d*, To the history of his illness.

In proceeding with the inquiry, a second object will be to lay hold of and to group the facts which are essential to the particular case, and which explain its character. At this point the exploration may become narrowed or enlarged, or assume one or other of an infinite number of possible forms, according to circumstances; but no key to the explication of the generic nature of the morbid state under review can ever be found, unless by successively questioning each of the three general classes of facts I have named, under more or fewer of the following particulars.

CLASS I.—The moral and social condition of the patient.

1. *Name and surname.*—Here the element of sex, modifying every circumstance of the case, meets us at the outset.

This is particularly true of the female. There is no organ which excites more multiplied, powerful, or varied sympathies throughout the economy than the uterus, nor is there any class of facts the knowledge of which is more limited to the experienced practitioner, or regarding which less practised persons are more frequently mistaken. The countenance, complexion, aspect of the eyes, of the neck, the sounds of the heart and arteries, the shape, postures, and manner of walking, and the functional disturbances of the stomach, spinal and crural nerves, and of the bladder of urine, in the female, readily and correctly suggest to those who are suitably instructed the necessity of inquiry into the condition of the uterus. There is no doubt that a physician who has been awakened to a sense of the tendency to overlook uterine disease, but whose notions on the subject have not been balanced by the corrective power of an extended experience of its phenomena, runs some hazard of seeing more in the condition of the womb on such occasions than is accordant with sober fact. The same is true, although from other causes, of the man whose practice is limited to the female sexual organs; and it may safely be asserted, besides, that no order of patients can more readily be betrayed into the adoption of the opinion of their physician, by a leading question or two, than can women into the belief of their being the subjects of uterine disease. Still, the high diagnostic importance of the question of sex is undoubted, and its bearing on the subject of prognosis is often not less real. Thus, the greater longevity of females than of males is well known, as is also the relatively low mortality from acute diseases in the non-puerperal, and its frightfully high amount in many of the same complaints in the puerperal female. A curious circumstance connected with prognosis in a number of cases is, that if your patient be a young man, his restorative powers will, with ordinary care, remove him out of your hands in a few days, while in the unmarried female above puberty, recovery takes place with great difficulty, in an imperfect manner, and only after a protracted attendance.

The greater susceptibility of the female adult, and specially when newly delivered, to contagion, than the male, is another aspect of the question of sex which deserves to be remembered. The rise of many an instance of child-bed fever is thus found in the simultaneous attendance of the accoucheur on some patient labouring under erysipelas, or certain surgical diseases, or in the dissecting room; and the same line of communication by the medical attendant is too often the true one in regard to attacks of scarlatina and typhus in the same circumstances. The tendency to such occurrences is greatly increased when the practitioner is conveyed from the one description of patient to the other in a covered carriage. How incessantly is it thus demanded of the physician that he should exercise a self-denied and intelligent superintendence over his own intercourse with the sick!

2. *Country, County, Town, or Street.*—Conjointly, these alone may sometimes afford a clue to the discovery of the nature of a case, and they are fitted besides to suggest most important hints on its prognosis and treatment. In addition to national distinctions, which have all much and varied medical meaning, not a little is often involved in provincial and even in more minute peculiarities. Thus, the natives of our Highlands, who greatly neglect vaccination, suffer much when removed to the Lowlands, from variola; and many of the same people, with whom animal food and adequate covering from their severe climate are often insufficient, frequently possess a marked disposition to tuberculous and other cachectic forms of disease. From feeding habitually on fish, many of them labour under intense disorder of the digestive organs, and of the skin; and from exposure to a constantly soft or humid atmosphere, they have often a striking proclivity to the diversified modifications of neuralgia, and to troublesome relaxation of the tonsils and uvula. The Irish, again, who are our most usual labourers, supply Scotch hospitals with the majority of their acute, and with a large proportion of their chronic cases. Albuminuria, for example,—a very common affection with this class from their great exposure to the weather, and almost always unobserved and mistreated at its outset,—constitutes in its different succeeding stages a very prominent part of chronic disease; while in the fever wards, again, not less than fifty per cent. of all the patients are of this nation, and often recently imported. The precise nature of a form of anasarca much resembling, but greatly differing in its proximate constitution from, that of albuminuria; and, also, of a variety of diarrhœa or dysentery,—both of which have been familiar to us during the last four years, as dependent on an impoverished condition of the blood, the result of want and exposure to cold,—has often been first suggested to my mind by the fact, that the patient was lately come from suffering Ireland.*

The inhabitants of certain districts around Glasgow, again, are subject to enteric or typhoid fever, and to dyspepsia; and, in other places in the west of Scotland, diseases of the respiratory organs; and in others, again, sibbens are indigenous. Amenorrhœa is a common effect of removal from the country to this city; and in town the diseases of certain streets are more remarkable for their cachectic, and those of others, for their relatively inflammatory character. I know public institutions here and elsewhere,—prisons, confinement to which often entails death,—schools, where the damp and malaria exert a strong influence on the sickness and mortality, and others in which hysterical and imitative affections are in some sort endemic. Persons resident in some of our suburbs, even, are very liable either to bronchial, to gastro-hepatic, or to enteric fever; while strangers living in Glasgow, and the natives of certain other of its districts, are more predisposed to typhus. Residents in agricultural provinces, or at the seaside, resist the causes of disease, especially those connected with the atmosphere, better than others, and, when ill, are more likely to be affected with acute inflammatory attacks, to require much more active treatment, and to recover in a greatly higher proportion than the inhabitants of crowded towns, whose diseases are more of a functional kind, and, when inflammatory, are much less strongly defined, and seldom require or bear depletion of blood, especially when affecting the upper classes or certain portions of the working people, long, and, it may be, for successive generations, employed in highly heated manufactories. In this class, especially in females, a state of habitual cachexia, marked by watery blood, a low amount of red globules, and an increase of fibrine, and associated often with hepatic disease, and a disposition to low inflammatory affections, chronic deposits of fibrine, and to hemorrhage, is too common.

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* Contributions to the Pathology and Treatment of the Scorbutus at present prevalent in various parts of Scotland. By Chas. Ritchie, M.D.—*Edinburgh Monthly Journal, Nos.* 79, 80, *July and August* 1847.

Twenty to thirty years ago I practised in a populous rural district a few miles from Glasgow, when, at an average, I blooded two if not three patients daily; and during the last twenty years that I have resided in town, although constantly occupied amongst all classes, I have not required to perform this operation, or to order its performance, so often as once a month.*

The habits of the wealthier classes in Glasgow afford some striking illustrations of this powerful and diversified influence of external circumstances. During winter, the exposure and physical effort of a large proportion of the adults in these classes are limited to their diurnal progression to and from their places of business, the atmosphere in which, as well as in their dwelling-houses, is seldom under a temperature of from 60° to 70°, and both abodes, also, being often made as air-tight as is consistent with respiration, and filled with the glare and other products of fires and gaseliers; they afford but sorry protection against the baleful influence on the functions of organic life, of the intense mental efforts and disturbing moral impressions to which many of their inmates are continuously exposed. Derangements of the assimilative functions, and their numerous accompaniments, terminating often in hepatic cirrhosis, and also structural affections of the head, are the most frequent consequences which ensue. The children, again, of such persons, macerated in warm rooms, and their minds over-worked at school, exhibit the same pathological results; and both they and their parents, from the consequent greater development of their nervous system, perish in greater numbers when attacked by contagious or epidemic diseases than the corresponding classes in the country or the working classes generally in the city.

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* *Vide* Remarks on the Medical Topography of the Parish of Neilston. By Charles Ritchie, Member of the Faculty of Physicians and Surgeons of Glasgow.—*Glasgow Medical Journal*, Vol. i. 1828.

Again, immediately on the return of summer, the west end of our city becomes a comparative solitude, its emancipated crowds having diffused themselves, in eager expectation of enjoyment, over the many beautiful localities with which the Clyde, from its origin, high inland, on the confines of Nithsdale, to its confluence with the ocean in St George's Channel, abounds; and now the diseases to which they are subject are the smart inflammatory attacks which follow their exposure to the sudden showers, and their use of the damp and ill-built houses, and the pleasant but often chilling means of transit on steam-boat decks, or open carriages; or they succumb, as new comers so often do, under miasmatic or atmospheric fevers, resulting from their unconscious vicinity to paludal exhalations, or, simply, from cold and moisture; while, again, on their return to town, on the close of summer, they undergo a second process of climatization, which is often preceded by much suffering from different varieties of acute indigestion,—the immediate products of their sudden re-immersion in a town atmosphere and habits, while yet enjoying the rude appetite which they had acquired in the country.

3. *Date.*—The chronology of a case of disease, besides its mechanical utility as a matter of arrangement, has reference to the moral history of the period, and to the seasons of the year. Thus, times distinguished by great commercial activity are ever accompanied by an increase of acute disease, and by the prevalence of severe surgical accidents; while seasons of mercantile distress, when they are not protracted, are as strongly marked by a diminution of disease, and, when more lengthened, by the wide prevalence of those disorders which are either engendered or aggravated by depressing causes. The year 1826 was thus one of extended and severe financial embarrassment, and, at the same time, one of the healthiest I have known, and I have observed the same subsidence of sickness in other instances of short commercial crisis since; but the period from 1846 to 1849 inclusive has proved a time of uninterrupted difficulty and dismay in every department of trade, while it has, also, been distinguished by much varied and largely diffused disease. The unsparing tear and wear of animal life in labour and in pleasure which accompanies prosperous years,

and the restraint on this which necessarily accrues from an arrest on trade, will readily explain the prevalence of indisposition in the former, and the immunity from it in the latter; and it is quite as apparent that, should such restraint at length merge in privation, its sanatory character must be converted into one of an opposite nature.

In Glasgow typhus fever and small-pox become epidemic most readily during the continuance of good trade; but this depends on the circumstance, that at such a time the influx of young adults from the country, and from Ireland and the Highlands of Scotland, few of whom have been protected by a previous attack of either disease or by vaccination, is constant and large, and that such persons, when suddenly immersed in the atmosphere of our wynds and pauper lodging-houses, prove ready victims to the morbid poisons always present there, but which the protected or climatized ordinary inmates successfully resist.

The agency of the seasons in creating and modifying disease gives an important bearing often to the state of a case.

The excrementory separations from the blood, which are essential to the maintenance of health, are, in winter, accomplished principally through the lungs and kidneys, and, in summer, by the liver and skin, and these organs become in consequence, at such times, the most frequent seats of disordered conditions. This fact is well exemplified in the west of Scotland by the changeful aspect assumed by simple continued fever in successive periods of the year. Typhus, like small-pox and other acute exanthems, is the product of an animal poison, and is not influenced, except in its local complications, by temperature; but simple fever originates in atmospheric influences; and although it may afterwards be communicated by the contact of the sick with the healthy, especially with the healthy whose vital energies have suffered depression, its creation and also its specific form are wholly dependent on climatic causes. The usual fever of the spring months is thus catarrhal or bronchial fever. Gradually, as the heat of summer sets in, the thoracic symptoms present an intermixture of such as are bilious; and in summer and autumn gastrō-hepatic or short relapsing fever is the prevailing type, while, in the winter and early part of spring, typhoid or enteric fever, with bronchial complication, is the most ordinary form.*

4. *Existing or recent Infectious or Contagious Diseases in patient's neighbourhood.*—The knowledge of these often gives an immediate right direction to our inquiries. Thus, when typhus prevails, we habitually, on examining a pyrexial case, look for a diffused macular rush on the skin; when it is gastro-hepatic or bilious, relaps-

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* Practical Remarks on the Continued Fevers of Great Britain. By Charles Ritchie, M D.—*Edinburgh Monthly Journal, No.* 70. *October* 1846.

ing fever which is epidemic, we observe whether there be a tender epigastrium, and a congested, bilious tongue; and should enteric or typhoid fever be the prevailing constitution, we inquire for the ochre-coloured, liquid stools, the tympanitic abdomen or gurgling cœcum, the insulated and raised papules on the trunk and inner aspects of the arms and thighs, and the transverse chops in the tongue.

Sometimes we may be betrayed by the wide prevalence of an epidemic to trust too much to its universality, and in practice to confound other eruptive or febrile diseases with it. Thus, the efflorescent redness of the cutis, which often precedes and accompanies the eruption of the papules of variola, has a strong resemblance to that of scarlatina; and the clustering, irregularly-shaped patches on the face, with sparse, insulated, papules on the body, which usher in rubeola, are often mistaken, when this disease prevails, for initial small-pox; while, in parallel circumstances, pneumonia, delirium tremens, and cerebral inflammations, are frequently confounded with fever.

The existence of two epidemics at the same time in the same locality, having a general resemblance to one another in their symptoms, and yet the most opposite characters in their pathology and treatment, is an arrangement which is sometimes met with, and which demands great circumspection on the part of the medical practitioner. Thus, I have seen dysentery epidemic along with a mitigated prevalence at the same time of Asiatic cholera. In both diseases there are intestinal discharges, and a vascular plethora in the abdominal viscera; but in dysentery the disease is an inflammation of some extent of the larger bowels, and must be treated as such; there is fever, and the evacuations are painful, scanty, and bloody, or slimy; while, as regards cholera, we can at least say, that it is not an inflammation of the bowels, also that it will not be cured by the treatment appropriate for that pathological condition, there is seldom fever, and the discharges are well known to be copious, watery, painless, and without slime or blood.

When alluding to dysentery, I cannot refrain warning you, in strong terms, of the danger you incur of mistreating this disease. I am not acquainted with any other affection into the treatment of which popular errors, and the mischievous and unscientific practice of prescribing for symptoms, have been more fatally admitted. I refer to the habit of giving brandy, opium, sugar of lead, and other stimulants and astringents, so commonly practised in this complaint by medical men, who in other respects are well informed and judicious.

Such remedies will often destroy your patients; they will frequently, also, leave an incurable chronic form of the affection, and they will always jeopard and protract recovery; whereas, if the disease be treated by a rigid abstinence from cordials, and, when necessary, by a well adapted use of the lancet or of leeches, along with the employment, say every four hours, of drachm, or sometimes of half-drachm, doses of sulphate of magnesia, largely diluted, till copious watery stools, free from blood or slime, are obtained, and the use of these be then followed by a large opiate, and, if required, by a blister,—it will in every early case of it, as it occurs in this country, be most probably subdued. The weak, watery solution of sulphate of magnesia seems to prove beneficial in dysentery, not simply by freeing the bowels of their contents, but chiefly by unloading the congested vessels of the intestinal coats. There appears to be a more advanced stage of the affection, in which the vitality of these vessels has become so impaired, that this effect is no longer obtainable by such means. In these cases the action of the nearly disorganized capillaries may yet be restored by an alterative course of calomel and opium.

5. *Religion.*

6. *Education.*

Other things being equal, individuals whose judgment, will, and affections are regulated by true religion have fewer diseases, live longer, recover with greater facility, and observe treatment more intelligently, than those do who are of an opposite character. Their testimony, also, on points which involve moral considerations, is more credible, and their non-exposure to many causes of disease which influence others, may often be safely assumed. The mental culture and discipline which a merely intellectual education even gives to some patients, infuse a distinctness into the narration of their ailments which greatly aids our diagnosis; and they permit also such appeals being made to their intelligence and good sense, as often, by enabling us to carry them along with us in the practical appliance of a distinct principle of treatment, to increase its efficiency.

The question of religion involves various other considerations of a therapeutic or remedial character, to some of which I may be permitted to advert.

The relations which our patients occupy, for example, as responsible and moral beings, entail on them often physical effects of the gravest description; and it is only in the light of the Divine government that such relations can be correctly appreciated, and their consequences averted. Of what moment is it, therefore, that the judicial, punitive, yet forbearing dispensation under which humanity is placed be clearly recognised by the medical practitioner, and that on befitting occasions he should counsel obedience to its sanctions as the essential prerequisite to the removal of disease! I would refer here to the illustrations of this view which have been supplied by the recent prevalence of cholera; in regard to which, while the agency of natural causes, whether in its infliction or removal, need not be disputed, the efficacy of public and national submission to the Divine administration [illegible] was, I think, most conspicuous and satisfactory.

Another consideration of a kindred nature, with which it is equally desirable that we as medical men should be acquainted, arises out of the position in which our patients are placed under a spiritual and moral, remedial or punitive dispensation. The full enunciation and proof of this agency in the production and removal of physical maladies, is to be had exclusively in the Scriptures; but there the announcement is often made, that not only is disease in its multiplied forms employed by the Saviour as a means to awaken the fears and arrest the attention of the spiritually unconscious subjects of his regard, but that its removal is frequently made contingent on their reception of His righteousness and atonement. As counsellors of the sick it is often so that we, with much honesty and mistaken benevolence of purpose, give reiterated, earnest injunctions that our patients in their last days shall not be exposed to conversations on religion; and, whether from this cause or from the influence of like feelings on their relatives, it is a common thing that the bed-rooms of the dying are effectually closed against those who would deal faithfully with them on their spiritual interests. Many medical men think, and think sincerely and also strongly, that to infringe on this rule is to deprive their patient of his last slender hope of life; whereas the Scriptures unequivocally (vide Job xxxiii.) assert that to admit a free announcement to the dying of the Divine righteousness, in their reconciliation to God through the Mediator, is, when it is welcomed by them, the only way to secure at once their spiritual life and health, and also in many cases restoration to the full enjoyment of all their bodily powers.

I do not doubt that such conversation may sometimes be ill-conducted as to time and other circumstances, and the possibility should be provided against; but what I insist on is, that the declaration of the Gospel to the sick and dying, instead of proving to them a source of bodily injury, is often, when it is received, the Divine appointment for their restoration to bodily health, and that we as their medical guides cannot better commit their welfare, as to their disease and seeming approaching death, or more really fulfil, in the spirit of genuine medical science and wisdom, as well as of benevolence, the functions of our office, than when we recommend and duly regulate the adoption of this measure.

There is still another aspect of the psychological constitution of our patients, with which it is most desirable that we should be familiar. I allude to the influence exerted on the intellectual and physical functions by purely spiritual causes.

The reconciliation of a human being to his Creator is in general preceded by such a disturbance of every element of his moral nature, and the resistance of his will in the process is often so protracted, that every bodily function becomes disordered, the general health is withered, and, according to existing predispositions, the brain, the heart, the digestive or other organs, are found to manifest more special sympathy with the existing spiritual struggle.

Individuals so affected, although usually preserving entire silence on their state of mind and feeling, frequently, from the solicitude of their friends, come under our care for the removal of their impaired health, and the mistakes into which we may be betrayed in such circumstances, are sometimes as prejudicial to our reputation, as they do not fail to prove to the welfare of our patients. Here, again, an intellectual order of means, wielded by an omnipotent spiritual agency, are indispensable to the removal of the functional ailments of the body; but the physician who is duly aware of what is wrong may, nevertheless, secure a large measure of benefit to his patient by the distinctness of his diagnosis, coupled with the assurance of the absence of danger, and also by the proper regulation of both the moral and physical means of treatment.

When referring to some of the ways in which religious considerations demand the intelligent regard of the practical physician, I must not omit the mention of a class of cases, in many respects resembling those already noticed, but widely different from them in essential nature. I allude to persons who are supposed by themselves and their friends to be undergoing a work of the Divine Spirit on their minds, in whom the spiritual distress or commotion which exists is dependent on natural causes, and is aggravated by religious reasonings and suasion, while it is removed or relieved by the judicious employment of moral and medical treatment.

Such persons, instead of being secretive, in reference to their feelings, like those formerly mentioned, cannot refrain conversation on their supposed religious state. This they always regard as utterly hopeless,—a feature which is far from being strongly marked in the others. The pertinacity with which they cherish desponding views of the Divine administration in reference to themselves, and the eagerness with which they seek relief from their feelings by applications to others whom they deem more favoured, together with the melancholy fact, that they never escape from their difficulties by these means, and at length seek relief uniformly in meditated suicide, which is also but too frequently accomplished,—are all so many distinguishing characteristics of this condition. On inquiry, also, a predisposition to insanity will in general be satisfactorily established in such cases, and the patient will be found to labour under more or less derangement of the health, and to exhibit a morbid exaltation and acuteness of the intellectual functions.

The proper treatment here is absolute seclusion, due attention to the condition of the organic functions, and a total prohibition of religious reading or conversation.

7. *Age.*—This element, possessed as it is of all the universality and unerring precision and uniformity of a natural law, is eminently fitted to throw much important light on the position and circumstances of the sick.

The possibility of dentition, of acute eruptive diseases, and of affections of the liver or of the brain, in infancy or childhood; of irritation of the genitals, of phthisis, and of hysteria, in adolescence; of disorder of function, particularly of the assimilative organs, and of commencing lesions of the solid tissue, in adult age; and the visceral and chronic cutaneous diseases of advanced years,—will thus require remembrance; while, the diagnosis once formed, the great susceptibility of all the organs in early life, the energy of the vital actions in the adult state, and the altered qualities of the blood and lowered vitality of the system after the fiftieth year, supply recollections of much value in the prognosis and treatment. An important consideration, also, on this subject, is the measure of correspondence which there is between the patient's apparent and his declared age. A marked discrepance here is most unfavourable to his attainment of the average expectation of life, even when in health. How inferior, also, the chances of an individual's recovery from fever, variola, or any acute disease, after his fortieth year! and how greatly enhanced is his danger, should to this be added the appearance of premature senility!

8. *Married, Single, or Widowed.*

9. *Number of Children,* and whether nursing or otherwise dependent on patient, or contributing to the support of patient, and also the number which may have died, and their diseases.

These are all of them points which nearly and variously affect the status of the party, yielding evidence, as they do, on the nature of any sexual disorder which may be present, and on the constitutional vigour and hereditary tendencies of the patient. The predisposing influence, for instance, of recent marriage in relation to contagion in general, and its exciting tendencies in the subjects of hereditary or of dormant chronic disease, are often as powerful as they are unsuspected; and the repeated mortality of infants in any family, soon after their birth, is sometimes significant of the syphilitic, as that occasioned in more advanced infancy or childhood by hydrocephalus, scarlatina, or measles, is of the scrofulous tendencies of the patient.

The insight which a reference to the particulars noted under this head affords into the social or commercial condition of our patient, often enables us to anticipate with much precision the complexion which his case will assume under our hands. There are some individuals whose systems you observe to respond sluggishly and uncertainly to remedial appliances, and who are no sooner freed of one ailment than they relapse into another, and so on, till you are ashamed of the protraction of your attendance; and there are others in whom the very reverse of all this is gratefully observed. Now, it will often be found that the former persons are secretly eaten up of chagrin, or that they have long been maintaining an unequal fight with commercial or other difficulties; and that, in the other, the circumstances of the patient have been comfortable, and that his mind has been sustained and cheered by the influence of hope and agreeable expectation. Periods of mercantile distress, such as we have recently passed through in this country, or of political agitation and change, such as still disturb some of the other nations of Europe, teem with the most melancholy illustrations of the first of these kinds of cases.

10. *Occupation.*—I commend this prolific source of disease to your notice, as supplying a field of inquiry, in which, whatever the facilities of which otherwise deprived, you may all engage, and contribute to the general stock of medical knowledge, and the relief of humanity.

Its bearing on the expectation or value of life, and its utility as a key to the diagnosis of disease, are both important; and, in a population like ours,—so accumulated, diversified, and thoroughly engrossed in the acquirement of the means of subsistence or indulgence,—its investigation is full of promise.

I have spoken of the influence of occupation on the value of life. I do so in reference to the professional responsibilities which you will soon have to encounter, in the examination of lives for assurance societies. On such occasions you will be guided no doubt by the general aspect of the individual, and will challenge in succession his natural, moral, and medical history; but how different, everything else being equal in these particulars, will be your estimate of the expectation of life in an unfortunate member of our own profession, who is called to labour amongst the midwifery, contagion, competition, and irremunerative but ceaseless hurry, of a country or even of a town practice, and that of a beneficed ecclesiastic, or of any other man of literary leisure! The disparity, to borrow the language of commerce, will be equal to something more than ten per centum, and in cases which are only a little doubtful, will prove sufficient to throw the poor medical practitioner out of the category of assurable lives.

The surgical wards of this hospital are ever teeming with unmistakeable illustration of the agency of occupation in giving rise to mechanical lesions; and although the power of the same influence in peopling the medical wards is less apparent, it is equally real, and not much less productive.

You have heard of the housemaid's knee. There were recently three cases of it up stairs in adjoining beds, in two of which the joint was open and disorganised. There is also the housemaid's stomach. It arises from the constant succussion of the epigastrium, which is effected by the strong, generally wooden, spars situated in the front of the tightly-corded stays, while the girl stoops in lifting heavy bodies, or in arranging the details of the kitchen floor. The symptoms are great tenderness and pain in the epigastrium, increased on eating, and often accompanied by hematemesis, and sometimes by spinal irritation.

You are almost daily mournfully privileged to see some workman brought in who has been laid prostrate by an extensive bruise or by the smashing of one or more limbs and as you observe the ghastly icteroid countenance, the single sound which is all that remains at the heart, the feeble pulse and cold extremities which instantly follow on such catastrophes, your sympathies for the sufferer are most properly at once awakened. Not so is it, however, in relation to the labourers, farm servants, potters, masons, pedlars, police officers, and others exposed to atmospheric influences, whom the physicians have to treat for multiplied acute and chronic lesions incident to such exposure; or the warpers, basket makers, and others, with heart affections, arising out of their habitual stooping; or the chemical-work labourers, with pneumonia and phthisis, occasioned by the continued inhalation during their employment of muriatic acid fumes; or the colliers, bakers, and cotton-carders, who become asthmatics, from the mechanical irritation of the atmosphere they breath; or the miners, who perish under spinal distortion or heart disease, produced by their continued mal-position when at work in narrow seams; or the shoemakers and tailors, who from the same cause also become the subjects of cardiac disease; or the stocking and hand-loom weavers, and shoemakers, who, owing to the pressure of their implements on the stomach, suffer from chronic gastric affections; or the labourers, sempstresses, and others, whose employment prevents them the indispensable luxury of a dinner, duly constituted of fresh animal and vegetable elements, and who accordingly often become ill during winter with scorbutus, produced by their confinement to saccharo-carbonaceous food; or the weavers, who require to conduct their labour in damp apartments, and who are so often seized in consequence with sciatica, paraplegia, and albuminuria; or, finally, the blacksmiths and furnacemen, who, under the influence of the strong radiated heat to which they are exposed, become the victims of apoplexy or palsy. Such sufferers do not excite a similar interest to that felt for a surgical patient, simply because the causes of their diseases are less obvious and impressive, and the termination of these in death is more in the course of ordinary experience. In the following case of acute pemphigus, arising from the irritation of a metallic poison absorbed into the system during the lad's exercise of his vocation, the rarity and other features of the affection under which he laboured form an exception, perhaps, to these remarks, and sufficiently justify me in narrating it in detail.

Dominic M'David, aged nineteen years. June 4, 1847. This patient is the attendant on a public amusement called the Waterloo Fly, and states that for three or four months past he was, from want of pockets, in the habit of having about a shilling's worth of copper coins placed four or six times per hour, for a few minutes each time, in his mouth, and that ten days ago he began to have profuse salivation, much thirst, intense heat and pain of mouth and throat, with difficulty in speaking and swallowing, followed five days afterwards by a florid eruption on the hands, arms, and lower extremities.

The patient lies on his right side, the eyes greatly suffused, saliva flowing profusely from his mouth, the lips denuded of epithelium, and covered with incrustation. The tongue is red, swollen, and ulcerated, and the mucous lining of the cheeks and pharynx is much inflamed, and exudes a pus-like secretion. There is great prostration of strength, sense of general coldness, some disposition to vomit, and he complains of a sense of burning heat and pain in the throat, which extends as far down as the clavicles, and is felt in the stomach on taking food. A cutaneous efflorescence occupies the whole of the palmar, and nearly all the dorsal aspect of hands. It affects the form of patches, many of which are elevated into vesicles, and some into large-sized bullæ. One of the earliest of the vesicles appeared on the *glans penis*, and has burst and left a large abraded surface. Pulse 120, small and feeble; thirst excessive; bowels open. The patient says that he was previously asthmatical, and there is some dyspnœa. The heart sounds are short, and the lungs are highly emphysematous. Had a similar attack to the present about a year ago, when employed at the same occupation, but it was milder. Denies syphilis, and never had any mercury.

He was directed to have a teaspoonful frequently of a mixture of equal parts of milk, mucilage, and albumen of egg; also fresh milk for common drink. To take three drachms of castor oil immediately, and to have a pint of London porter in the day.

6th, Pulse 96; mouth slightly better; and bullæ on skin emptied; is sleepless. Porter to be increased to a pound and a-half daily. Mouth to be smeared frequently by a camel-hair pencil, dipped in a mixture of half an ounce of *liquor plumbi acetatis*, and three ounces of milk.

8th, Numerous bullæ, some of them five or six inches in diameter, and surrounded by extended rose or copper-coloured areolæ, are observed to-day to be scattered over whole of body and limbs. The base of some of the bullæ is of a black colour, from effusion of blood. The glans and scrotum are much excoriated. Mouth continues somewhat better. Ulcers to be touched once daily with a weak solution of nitrate of silver, and in the intervals to be dressed with simple ointment and carded cotton wool. Opium powder, twelve grains; tartrate of antimony, half a grain; extract of hyoscyamus, as much as will form twelve small pills, one of which may be taken every sixth hour. Omit the porter.

10th, Pulse 84. Bullæ have discharged themselves, and cutis, especially over hands, is occupied by large patches of superficial ulceration. Mouth improved, but patient is much emaciated. To have one of the pills every eight hours only.

14th, Pulse 120. Gums of a bright scarlet colour. Ulceration healing, but there is much emaciation. To have six ounces of wine.

15th, *Death.*

Inspection.—Prepuce of penis gangrenous. The only appearances of recent disease observed in the internal organs were some adhesions of both lungs, and an abscess of a very peculiar kind in the extreme edge of the right lung. The quantity of matter in this did not exceed three drachms, and was of the colour of liquid fæces. The structure of the part in which it lay was perfectly natural. It had not the character of a cyst, or of the walls of an abscess.

The lungs were emphysematous, the heart dilated, the auriculo-ventricular openings enlarged (each admitting three fingers), the aortic opening somewhat narrowed (admitting the index finger only), and the liver, spleen, and kidneys increased in bulk and in softness, and the latter were very granular.

Here the only recent lesions were the gangrene of the penis, the pleuritic adhesions, and the abscess. There would be some abrasions of the cuticle also in the situation of the bullæ, but they have not been recorded. The other appearances were all dependent on the habitual chronic bronchitis. Death was produced by the gangrene, occurring in a very exhausted state of general strength. I leave the case with you as an example of the operation of a mineral poison, something akin to what sometimes occurs during the exhibition of mercury, arsenic, and other metallic substances.

The concluding element to which I would advert, in reference to the moral and social position of our patient, is,—

11. *His Habits of Life.*—By these I mean his power of restrain-

ing, and also of properly exercising, his natural faculties, whether in reference to eating, drinking, personal cleanliness, sexual continence, or mental and physical exertion.

An individual whose habits in these respects are well balanced, and who happens to be in easy circumstances, will seldom require our aid; or if, from temporary inadvertence, his digestion has been deranged, or from natural delicacy of constitution he has suffered from some atmospheric cause, he will, if judiciously treated, recover by the simplest means, and in the speediest manner.

Many dyspeptics, who are correct in their general habits, possess a morbid sensibility of stomach, which is ever betraying them into dietetical excesses or singularities which perpetuate all their ailments. Another set of individuals, chiefly females connected with the working classes, of most excellent deportment in other particulars, suffer habitually from nervous affections, and acquire a great proclivity to various diseases, from the habitual error in diet which is popularly called a " tea dinner." A third class of orderly persons are led from something in their external position to eat two meals only in the twenty-four hours, and, while they observe a longer interval, they generally, also, eat more than their neighbours, and acquire a corresponding complexion in their functional powers, predispositions, and disorders.

The transition from the last named class of persons to those who add a dram of brandy, or a tumbler of punch, or an habitual two or three glasses of wine, or a bottle of ale or porter, to their dinner, is easy; and when arrived at such parties in our professional capacity, we must prepare for all the modifications which a high amount of the fibrin and red globules of the blood, united to an undue development of the nervous system, and, perhaps, to congestion of the liver, or which any one of these singly will exert on our diagnosis and remedial efforts.

As to those who launch out beyond these limits, and who come under the category of avowedly intemperate people, the modifying power of their habits on their diseases is in one sense more obvious, although sometimes also the occasion of important mistakes. You are called, for example, to a florid, robust-looking young man, who has sprained his ankle; you cover the joint with leeches, and in a few days he is insane. The flush of inebriety has been mistaken for that of health, or you have forgotten that, in large towns at least, a drunkard cannot bear depletion. Again, a man is brought into hospital in a strait waistcoat, with a stupid collapsed countenance, suffused eye, sluggish pupils, muttering delirium, inability to articulate, twitching of the tendons, and something like a typhus rash. Ignorant of his history, you diagnose it contagious fever; but the man is walking about in a week, and, on inquiry, you discover that he became your patient in the stage of exhaustion of a violent paroxysm of delirium tremens. In respect to prognosis, again, my experience in the selection of lives for assurance companies has taught me that such societies are safer with men of regular habits, although delicate in constitution, and a little tender in some organ, than with the most apparently unexceptionable lives in tipplers, or occasional drunkards.

This subject may be put still more strongly in the matter of life assurance. The alleged probability of life at the age of eighteen is about forty-one years and a half, and at thirty-eight it falls to about twenty-eight years and a half; the premiums charged at these ages being within a fraction each respectively of two per cent. and three per cent. annually. Now such are the risks connected with a young man's entrance on the active conflict of life,—some proceeding from hereditary predispositions, and the influence on these of his new pursuits; others from the high susceptibility at his age to be affected by contagious diseases; and others, again, from the unestablished moral and religious habits which so often attach to this period of life,—that an assurance on a life at thirty-eight, which was in other respects eligible, would, in my opinion, be a safer investment for a short period, say for one year, than one on the life of a lad of eighteen.

It is to the influence of more uniformly good habits in the female sex also, that the probability of life in them, despite their more delicate organization, their exalted sensibility, and exposure to the dangers of child-bearing, is higher at all ages, except, perhaps, the very advanced, than it is in men.

With regard to the sexual element which is, without doubt, largely involved in the present point of inquiry, there is a difficulty in speaking. It is one of the many evils with which our profession is beset, that it is incumbent on us to know much, which, unless it be kept in abeyance by strong principle in ourselves, is debasing in its tendencies. Our patients are animals deprived of the preservative instincts of brutes; and in proportion as they are similarly defective in moral power, their feelings and practices assume a worse than quadrupedal complexion. In such event the general health is in time impaired; and when weakness of any organ previously obtains, it soon becomes developed, and the individual passes into our hands one of the most intractable of invalids.

Superficial vesication of the external parts, with largely diluted croton oil, as half a drachm to the ounce of almond oil; an issue over the pubis; the cold water sitting bath continued for half an hour night and morning, early hours, a hard bed, a plain regimen, active and laborious occupation, and, in bad cases, the free cauterization of the inner surface of the neck of the bladder with lunar caustic, together with intelligible and forcible appeals to any good sense and conscientiousness the patients may retain, are indispensable additions to the treatment which the case in other respects may require. In graver forms of this deplorable condition, neuralgia and subacute inflammation of the seminal apparatus, relaxation of the sexual organs, and sometimes chronic peritonitis, are met with. Here much may yet be done by a sustained moral effort on the part of the unhappy patient, united to untiring perseverance in the physical treatment already mentioned. A copiously diluted spirituous solution of the bichloride of mercury continued for a lengthened period, in gradually increased doses, is a safe and powerful mean of removing the chronic inflammation and its consequences.

In the matters of personal cleanliness and physical activity, of which I have also spoken under this head, they always go together; and when present as habits in our patients, they are invaluable in creating and sustaining a tone of constitution favourable to the success of medical treatment. Hydropathic medicine includes various excellent therapeutic appliances which, although often ignorantly or intentionally averred to be new, and also substitutionary of all others, have, in truth, been taken from the treasury of rational medicine, and been long employed by enlightened and honest physicians, in appropriate circumstances, with much advantage. As an exclusive system of medicine, hydropathy, though free from the daring imposture of homœopathy, is bald enough, nor can its deficiencies be ever obviated by either the frequency or the continuity of the ablutions it enjoins.

Class II.—I pass to the Second General Division or Class, or that which has reference to the physical aspect and state of our patient; and here the specific points for consideration are—

1. *Complexion*, which may be either

a. Florid, the redness circumscribed as in the scrofulous predisposition.

b. Sanguineous, as in the apoplectic.

c. Pale, in nervous and structural diseases.

d. Icteroid, as in congestion of the liver, or in actual jaundice.

e. Dark, in some functional affections of the liver, bowels, or uterus, or in malignant, organic lesions, or, generally, where there has been long-contined suffering.

f. Livid, in obstructed circulation of the right side of the heart.

g. Flushed, in pyrexial; and

h. Hectic, in cachectic diseases.

The observation of any of these appearances is often sufficient to give a right direction to our succeeding inquiries. When, for instance, with the first mentioned, we notice a delicacy in the texture, and a chalkiness in the hue of the general surface, and a lank, dry state of the hair, we are led to place the stethoscope on the apices of the lungs, and discover loud double breathing, interspersed with moist and considerable sized crepitus, and, perhaps, some creaking and rustling of the pleura,—the indications of the first stage of phthisis. When, on having our eye arrested by the second, we carry the same instrument to the præcordia, and perceive that it is raised up visibly from the thorax with every throb of the heart, and that this organ emits a more or less audible and protracted bellows murmur, we recognise the presence of valvular disease of the left heart. Thirdly, when, on being consulted by an individual, say a young female, with a strongly marked anæmic countenance, we also notice the shining, pearly whiteness, and, perhaps, the prominence of the *tunica albuginea* of the eyes, and, possibly, some unusual tumidity of the thyroid gland, and are induced, by these appearances, to lay our stethoscope over the situation of the jugular vein in the neck, where our ear meets a medley of noises, resembling sometimes the whirring musical sound of the French top, and at others the humming of the bee,—noises always interrupted by firm pressure, under the mastoid process of the corresponding temporal bone, and indicative, especially if accompanied by a soft systolic murmur in the ascending aorta, of extreme spanæmia, demanding more extended inquiries in respect to its cause. Again, with what certainty may we predict the near approach of death, in suppurative inflammation, on the accession of jaundice, or the presence of important lesions, either of the organs or functions, on observing the wan, leathery cheeks, with mahogany-coloured orbital areolæ of certain patients. Or, should we see the nose, ears, lips, or cheeks injected with venous blood, at the same time that the external veins of the neck are turgid, enlarged in diameter, and perhaps pulsating, how surely may we expect to meet with other proofs of a dilated right heart? Or, if the complexion of our patient, on the contrary, be flushed, perspiring, and excited, how naturally do we direct our attention to the condition of the cerebro-spinal axis, and of the organic nerves, and observe, in the head, back, and limb, aches, surface soreness, and universal functional disturbance, the evidences of a fever; or, finally, if the flush of countenance be circumscribed instead of diffused, and sublivid rather than florid, the peculiarity immediately suggests a disease of the respiratory organs, the precise stage of which will fall to be determined by other considerations.

2. *Physiognomy.*—Under this head you consider—

a. The size and cast of the features, as the heavy, massive, unintelligent, and dusky-coloured countenance, and slightly convergent eyes, of the collapse period of typhus; the mind-illumined face, with motionless features, strongly clasped to and expanded over the subjacent bones, which is seen in the advanced stage of enteric or typhoid fever; the skin-bound countenance of chronic gastritis, the erubescent and tumid face of rubeola; the heavy, saturnine, and pale features of colic; the circumscribed, and sub-livid flush, and pinched features of pneumonia, or capillary bronchitis; the red nose and emaciated cheeks of organic disease of the stomach or duodenum; the doughy, suffering, or languid, or pustular face of irritation of the sexual organs; the waxy, transparent, bulky, and anæmic countenance of albuminuria, united with pinched features in amenorrhœa; the triangular face of the rachitic constitution; and the skin and bone physiognomy, large eyes and mouth of the pregnant female, and of the diabetic or phthisical patient.

b. State of pupils—as contracted in pyrexial states, or under opium; or dilated in diseases of debility, or some affections of the brain or of the great sympathetic nerve; or as having lost their parallelism in congestion of the brain, and in hydrocephalus.

c. State of nostrils,—as fuliginous in typhoid conditions,—encrusted with blood in some fevers and other affections, excoriated in coryza, or in discharges from the genitals, expanded with much rapidity in certain diseases of the lungs, and in oppression of the sensorium, and motionless in disease of the seventh pair of nerves.

d. State of the lips. Whether tumid, as in the lymphatic, or compressed, as in the irritable habit; florid, as in hyperemia of the gastric lining; livid, as in some cardiac and pulmonary complaints; anæmic, as in some of the profluvia and cachexia,—covered with sordes, as in typhoid; or with vesicles, as in catarrh; or with excoriations, as in some ulcerous affections of the mouth or throat.

e. State of the muscles of the face. As the fallen eyelid, and, perhaps, everted eye of paralysis of the third pair,—the occasional loss of power of the masseter and temporal muscles, associated with disordered or lost sensation of the face, in disease of the fifth pair, the inverted eye of palsy of the sixth pair, and the open eye, smooth forehead, immoveable nostril, and distorted mouth of that of the *portio dura* or facial nerve.

f. General expression of countenance, whether idiotic, sensual, suffering, or intelligent and placid.

3. *Hair of the Head.*—Whether—

a. Abundant, as in health, or

b. Thin.

c. Wanting, as in diminished power of the organic nerves, or in some diseases of the scalp.

d. Coarse and dry, as in phthisis and other cachectic affections; and,

e. Fine.
f. Flaxen.
g. Yellow.
h. Red.
i. Chesnut.
j. Dart.
k. Black, in individuals predisposed to scrofulous disease; or,
l. Gray, and
m. White in the aged, the melancholic, or the feeble.

4. *Temperament.*—Whether—
a. Nervous.
b. Sanguine.
c. Bilious.
d. Melancholic.
e. Lymphatic; or,
f. Combinations of one or more of these. All elements needful to be known as affecting the type of the diseases to which the individual becomes subject, and the facilities with which remedies act, or the party resists or overcomes morbid action, as is the case also with,—

5. *General Make and Form.*—Whether—
a. Robust.
b. Emaciated.
c. Well-formed.
d. Deformed.
e. Combinations of these; or,
f. Height, and

6. *Condition of Particular Regions.*—Whether—
a. Swollen.
b. Shrunk.
c. Alternately swollen and shrunk. Under which head we will have reference to the cephalic, pulmonary, gastric, mammary, and uterine developments, and to the considerations respectively involved in these, as the apoplectic, consumptive, asthmatic, dyspeptic, and dropsical habits, the existence of pregnancy, of cardiac, hepatic, splenic, or other glandular enlargement, and of distended bladder, meteorism, empyema, or emphysema.

The extreme practical importance of most of the particulars suggested under the three last groups (4, 5, 6), is often realised by the physician. Thus, I have seen parties of an irritable, sanguine constitution, and large, cephalic development, become apopletic in a hot bath of the usual temperature; and you will often meet with such, who cannot use even a warm bath without being seized with violent palpitation of the heart and headach, or who cannot so much as immerse their limbs in a hot pediluvium, without losing their night's rest from excitement of the nervous and vascular systems. The soothing influence, again, of these remedies in other constitutions is well known.

Another benefit accruing from the knowledge of a patient's temperament has more than once suggested itself to me, from the often foolish custom of smearing every kind of sore throat with caustic. In acute ulcerations of the throat, such as occur in scarlatina, this practice is greatly to be reprobated. In simple chronic enlargment of the tonsils, it is frequently a harmless procedure, should the patient chance to be of a phlegmatic constitution; but in an irritable, sanguine constitution, I have known it produce the most alarming symptoms, and in a cachectic constitution I have seen it occasion death.

The disadvantageous influence of extreme height of the person, as being often associated with a relatively feeble heart,—and of shortness of stature, so frequently united with undue size of the head,—on the capabilities of bearing disease and the probabilities of recovery, especially from fevers, is another matter worth retaining in memory. It is a remark as old as Celsus, that very tall men rarely get to be aged men.

The question of the existence of pregnancy is also one of which it would be difficult to overstate the importance. Every unmarried female, whom you meet in practice in this condition will attempt to deceive you, and many married women who consult you, not in this state, will be disposed to betray you into an opposite belief. The evidences of conception having really occurred are of a very illusive kind before the course of the third month of utero-gestation; and subsequent to this, they are often obscured by the presence of disease and other causes; and yet there is no one who will not expect you to speak definitely on the subject, or who will fail to laugh at you should you be mistaken.

In these circumstances, it will become you to be ever watchful of the possibility of pregnancy in much of your female practice; and, where any suspicion arises, to institute, in a prudent but in a systematic and efficient manner, an examination of the size of the breasts and their follicles, of the colour of the areolæ and nipples, the appearance of the abdominal walls, the presence or absence of a tumour in the hypogastrium, the development of the neck of the uterus, and the state of its orifice and of the urine. The presence of milk in the breasts, of a moveable body in the uterus, and of a fœtal pulse near to the pubis, of a placental murmur, and, if necessary, of lividity of the vagina, will also fall to be inquired into; and the opinion which we form must be in strict accordance with the evidence so procured, without any reference to the assertions of the patient.

It is foreign to the object of these remarks to speak specially of the signs of pregnancy. But I would remark in passing, that, while the usual *ballottement* of the uterus in these cases is practised at the extremities of the long diameter of the uterus, or between the fundus and the orifice, and is not appreciable with any exactness till the neck of the organ becomes somewhat developed, or between the fourth and sixth months of gestation, I have been enabled to detect the passive movements of the fœtus at the very end of the third month, by practising the *ballottement* in the short diameter of the womb, or at least from the posterior part of the fundus in the hypogastrium, to the anterior wall of the body, as felt through the roof of the vagina. The meteorism of the bowels, which is so common a symptom in early pregnancy, often facilitates this mode of exploration, by pressing down the body of the womb on the bladder, through which, when the bladder is emptied, the womb is easily examined.

It is good to abstain from giving an unqualified judgment on this subject previous to the termination of the first quarter, or before there be demonstrative proof to found on ; but it is useful to speak authoritatively so soon as there are clear data to warrant it. There is another rule which is valuable, namely, never to credit anything which may be urged either for or against the being of pregnancy, which is contrary to the ordinary course of nature. It is a curious and useful fact, that no unmarried pregnant woman ever attempts to conceal from you that menstruation has ceased. She puts another construction on its absence, and obtrudes other explanations of the symptoms present, but she never hides from you that the menses have disappeared. In the case of married females, who think themselves advanced in pregnancy, again, there will generally be, besides a host of negations, the suspicious occurrence of one or more alleged threatenings of a miscarriage during the period of their supposed gestation, or there will sometimes even be a pretty regular catamenial flow; but in consequence of the distension of the abdomen, and of the stirrage which is there, or of some other complication of circumstances, they consult you about their probable pregnancy.

It is an excellent expedient, when a doubt is felt in such a conjuncture, to take the precaution to write out in private all the facts bearing on the question. This will compel you to observe closely and minutely, and also to think severely, and, comparing the ascertained symptoms with the sanctioned or acknowledged principles which have regard to the subject, your conclusions will, in general, prove both easy and accurate.

There is another series of cases of married women, usually newly married women, which will cause you sometimes much perplexity. Those individuals are affected with irritability, and sometimes swelling of the uterus and ovaries, and at every monthly period they discharge, attended by much pain and straining, a membranous substance of the configuration of the cavity of the womb. In other examples of the same nature, the catamenia are retained for two or more months, when, the woman finding that she is sick, that she, perhaps, vomits, and that she has constipation, enlarged abdomen, swollen and painful breasts, and that there is an occasional show of reddish water from the vagina, consults you on the possibility of her pregnancy and approaching abortion. Such a case will in general terminate at an early menstrual period, owing to the accidental influence of some physical effort or mental exertion, in the evacuation from the uterus of an oblong mass of laminated concentric clots of some firmness, sometimes accompanied, or even surrounded, by large and rather thick membranous layers. In a lengthened attendance on a patient of this kind, you will sometimes observe the ordinary appearances of dysmenorrhœa, attended by the discharge of slender membranous shreds, to alternate on different occasions with either or both of the states now mentioned; and such females will frequently exhibit marks of pelvic peritonitis, and continue sterile.

The subacute inflammation of the uterus and its appendages, and perhaps the functional orgasm of the parts which is connected with the circumstances of the newly-married woman, are the true causes of these varied phenomena. It would appear as if the physiological and normal effect of the menstrual orgasm, in the production on the surface of the womb's cavity of a net-work of vessels at every catamenial period, were pushed in these cases into a true pathological condition, and that the membrane so formed was either discharged immediately on its formation, or that, being retained, it became a more or less perfect plug in the cervix of the uterus, permitting the escape of the serum, and causing the formation of a succession of symmetrical clots.

The proper treatment is to enjoin the patient to live *absque marito*, and to employ local depletion of blood, blisters, saline laxatives, the tepid coxaluvium, and a mild alterative, such as one-sixteenth of a grain of the bichloride of mercury, three or four times daily. In a late case of mine, in which these methods had been usefully employed, the lady, four months after their discontinuance, and when suffering from a relapse, consulted another practitioner, who introduced a circular dilator into the uterus, made of parallel portions of zinc and copper, and one-third of an inch in diameter, and two inches and a quarter in length. This stalk was supported on a hollow oblong pedestal, made also of a plate of copper, joined to another of zinc, its size being two inches and a quarter in length, and one inch and a quarter in breadth. This galvanic instrument, as it was termed, formed one of a series, and was designed to be replaced at the end of a couple of weeks, by another of larger size. The efficacy of the treatment could not be ascertained, however, owing to the distress occasioned by the instrument having compelled its removal, with no little difficulty, at the end of the first week. Her succeeding menstruation was accomplished with excruciating pain, and the discharge of some of the accustomed membrane. The lady continues to have pain in the situation of the right ovary, with much general disorder; and a prolapsus of the uterus, which had been greatly benefited under my care by the use of the gutta percha supporter,* has now returned. This pessary was formerly worn by her with great comfort, but since the counter-irritant treatment it cannot be borne. I examined the *os uteri* about three weeks after the removal of the galvanic apparatus, and found it converted into a gaping circular opening of the shape of the cupro-zinc stalk; and the labia, for about an inch all round, occupied by an opaque spot not unlike that which the application of lunar caustic occasions in the same situation.

I have not the means of forming a judgment on what may be expected from such an application of galvanism as that now related. My impression is, that the effect will be more of an emotional than of a physical kind; but, in regard to the gross impropriety of retaining metallic substances within the uterus, I have a strong opinion. I do not doubt, that in the patient whose case I have detailed, serious mechanical injury was inflicted on the uterus by the galvanic bougie, and that, had it been longer retained, the consequences would have been still more important. As illustrative of this, I give the following case.

I was requested one Saturday evening, about a couple of years since, to visit a lady at thirty miles distance, for the purpose of removing from her a metallic stalk-pessary, introduced for the cure of an alleged retroversion of her uterus. There being no conveyance to the place on the following day, I did not see her till Monday, when the agony created by the instrument having become insupportable, she had overcome her fears, and got her husband to extract it.

I found her labouring under violent hysterical symptoms, much tenderness of the abdomen, and having the genital passage so altered by inflammation that the *os uteri* could not be recognized. After this her confinement to bed was protracted, she ceased to menstruate, and as she had never had a child, a hope began to be entertained by her friends that she had got a compensation for her sufferings by having become pregnant. Dr James Wilson, from Glasgow, was requested to see her, with the view of settling this point. He ascertained that the uterus was unimpregnated, but that its orifice was obliterated. Soon afterwards this latter burst, and gave exit to a quantity of pus, and in a few months more, her situation not having materially improved, she removed to Glasgow to be under my care.

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* Account of a New Pessary. By Chas. Ritchie, M.D.—Edinburgh Monthly Journal, July 1849, p. 899.

On examining the uterus, I found that it occupied the axis of the cavity of the pelvis, but that it had become immoveable from the matting and consolidation of its peritoneal surface with the pelvic viscera. A succession of suppurations from the uterus occurred while she remained in Glasgow, and it was not till after many months that she was able to go out of doors, and at this moment she continues an invalid. The subject does not require farther comment.

It is not long since I was consulted by a medical practitioner at a distance, on the case of his own wife labouring under the deciduous metritis to which I have now referred. In her the membranous extrusions were said to take place with the strictest regularity once a month, to be always of an oviform shape, and to be equal in size to a small grape. One of these was sent me in proper preservation for inspection, accompanied by the opinion of the gentleman, that the body was nothing else than the monthly ovum newly shot out from the ovary, and that, as his wife appeared to have lost the power of retaining this *in utero*, his hopes of becoming the happy parent of a family were doomed to be perpetually frustrated. I referred to the disparity of size between the body sent me for examination and an ovulum just escaped from the ovary, and also to the general considerations connected with the subject, and the proper treatment to be enforced, but never having heard of the case again, I have supposed that my views on it had not proved acceptable.

I cannot leave this subject without alluding, as I have largely done elsewhere,* to the fallacy of the opinion very prevalent at present, and interfering, as in the instance just narrated, though most erroneously, with the views held of monthly decidual extrusions from the uterus, that, as happens with the lower animals at the season of heat, there is discharged at every menstrual flow in the human female an ovule from the ovary, and that the evolution of this microscopical body along the passages is the efficient cause of all the phenomena of menstruation.

I have shown in the memoirs referred to, that ova are discharged in large numbers from the human ovaries throughout the earliest infancy, in childhood, during amenorrhœa, pregnancy, lactation, and to the utmost term of old age, without giving rise to a coloured uterine discharge; and, on the contrary, that menstruation may be present for as many as eight or nine times consecutively, without the rupture of a Graafian vesicle; and also, that this function can be normally performed for the greater part of the whole menstrual life of the woman, although the Fallopian tubes be so agglutinated to the ovaries, or destroyed in their canals, that they are impervious to an ovule. There are a certain number of instances of women having become pregnant before they had ever menstruated at all; others have had all their children, amounting in a patient of my own to five, without menstruating once; and some, again, have been known to fall with child as long as two years after the menses had finally ceased. For these and other reasons, on which I cannot here insist, I believe that the hypothesis now spoken of is no more than a pleasing imagination, which will vanish with the light furnished by succeeding inquiries, and that the efficient cause of menstruation will yet appear, and be generally acknowledged to be, *ovarian* indeed, but not *ovular*.

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* Contributions to the Physiology of the Human Ovary. By Charles Ritchie, M.D. Two Serials. London Medical Gazette, 1843, 4, 5, *passim*. Edinburgh Monthly Journal, No. 56. Aug. 1845.

7. *The position of the patient.*

This, again, is another matter of great interest in a diagnostic view; as, for example, the burrowing in the pillow of scrofulous ophthalmia, the elevated head of vertigo, the sitting posture of hydrothorax, the prone position of colic, the dorsal decubitus of debility and of enteritis, the flexed limbs of metritis, the inability to lie on the affected side of acute pneumonia, and on the sound side in phthisis or empyema; or, should the patient be on foot, the folding forwards of the trunk, the measured step, with the hand supporting the belly, to which colic, and sometimes painful affections of the womb, constrain; while in *emphysema pulmonum*, the slow progression, the hands folded on the back, and the open mouth, are scarcely less characteristic, particularly when conjoined with elevated shoulders, an extended neck, and a barrel-shaped thorax.

Up to the point to which we have now advanced, in the examination of the physical aspect and state of our patient, the inquiry has been of an exclusively objective kind; and it is an important rule in such researches to prevent the individual speaking or moving till this source of information has been exhausted; when we may proceed to ask respecting—

8. *The Predispositions of Patient and his Relations.*
9. *The Diseases from which he has suffered.* And,
10. *His Ordinary State of Health.*

The liability of some constitutions thus to repeated attacks of scarlatina, varioloid, or other contagious disease, or the existence of the tuberculous, cancerous, hæmorrhagic, hysteric, or gouty diatheses, and the hereditary characters of cardiac, asthmatic, verminous, and many other affections, or the presence of certain idiosyncrasies in regard to food, medicine, climate, &c., require remembrance; while the past medical history of the patient, the marks of the cupping-glass, and other cicatrices, often prove a key to his existing condition.

Thus, in respect to the presence in the patient of some fatal diathesis, and the need there is of having reference to this in our opinions of the case, an elderly female consulted me lately for excruciating pains in the trunk and limbs. I detected a small schirrous tumour in the mamma, and there being also much irritative fever, I gave an unfavourable prognosis. As usually happens after such plain dealing, another practitioner was requested to take the charge. He happened, from thinking of the ailment as of a simple inflammatory neuralgia, to be sanguine in his declared expectations of success, but in a short time afterwards I was again requested to see her, with all her pains unmitigated, and moribund besides, from sudden effusion into the thorax, the effect of a cachectic pleuro-pneumonia. A similar case occurred in the hospital lately, in a woman who was admitted complaining only of rheumatism of the right leg. The tongue, however, was unnaturally red, the appetite impaired, there was much thirst, she was sleepless, the pulse was 102, and on examining the uterus, of which she made no complaint, the cervix and lips were found to be occupied by a mass of soft dark-coloured cancer.

The cachectic look, anæmic and maculated skin, and the presence of some ill-developed form of eruption,—as of psoriasis, having a scanty allowance only of very thin and small-sized scales, surrounded by mahogany-coloured areolæ, or the appearance on various parts of circular ulcerations, often capped by high conical crusts, or of clusters of very white, strongly indented, and circular cicatrices, are all so many indications of the constitutional agency of the syphilitic poison.

I have spoken also of the hereditary principle. There is now under my charge a young person who has suffered from psoriasis for years. Four generations, besides collateral branches of her relations, have been similarly affected. In none of these has treatment proved permanently useful. In the patient in question a long continued fever has, perhaps from the great activity of the secondary assimilation which fever occasions, effected a temporary cure. Whatever there may be in the principle of treatment which this fact suggests, the prognosis of the disease, when hereditary, remains unfavourable. There is a woman, also suffering from the same complaint by descent, and now about forty years of age, who has been under treatment at short intervals by the successive physicians of this hospital since she was a child. The histories of her case contained in the journals of the house would form a series of themselves; and as she was always temporarily benefited, sometimes by very opposite means, the chronological narrative of her hospital life might well illustrate the powers of the most esteemed remedies resorted to in chronic lepra within the last thirty years, and also the incurability, under them all, of the hereditary disease.

In proceeding to explore the actually existing state of your patient, you look in succession to the morbid signs afforded by the general sensations, and by the individual systems or organs, as—

11. *General Morbid Sensations;* as—

a. Heat.
b. Cold.
c. Oppression or anxiety.
d. Formication.

Thus, in typhus a crisis takes place very uniformly fourteen days after the rigor, so that this morbid sensation serves at once to indicate that the case is likely to become a fever, and, when really developed as a typhus, to point with much precision to the period when it will terminate; while, again, in gastro-hepatic or short relapsing fever, which often we do not see till the apyrectic stage, the commencement of the complaint in shivering, followed by heat and oppression, is very significant of its nature; and, lastly, in aguish and hectic affections, the periodicity of the pyrexial paroxysm is often all that is required for the identification of these. The relation of the rigor to the duration of the complaint is also a point of some importance; as, for example, when this symptom is the first intimation of indisposition in a lactating woman, we may confidently expect to find, on examination, that there is a red patch on the skin, covering a painful induration of either of the mammæ; and should we then cover the inflamed gland with water dressings, support the breast in a sling, give the patient a smart saline purge, and put her on such frequently repeated doses of the tartrate of antimony as she will tolerate, and on farinaceous dry food, there is great probability that mammary abscess will be prevented. But should rigor occur several days subsequent to the accession of pain in the breast, the circumstance denotes the formation of pus, and not the commencement of inflammation; and, in such event, a generous regimen, and perhaps a moderate use of some fermented liquor, should be substituted for the antimonial and purgative. The same remarks apply with equal force to *cynanche tonsillaris*, in which complaint there cannot be more suitable remedies than tartrate of antimony on the occurrence of the first, and warm porter on that of the second rigor.

12. *Morbid Signs* in cerebro-spinal and ganglionic systems.

These may be those of irritation, of inflammation, and of diminished or of lost functional power, and they may depend either on a disordered influence in the nervous system, or in some portion of it, which radiates from the centres to the branches, or which passes from these latter to the former.

I need only allude to the symptoms of irritation of this system as a whole which are observed in the earlier stages of typhus, and to those of inflammation of the brain and of the spinal marrow, of apoplexy and of palsy, and of some neuralgiæ, as these are laid down in books, to remind you of what some of the signs of the former kind are. With respect to those of idiopathic disease of the ganglia, their character will differ according to the portion of the sympathetic in which they arise, but their nature in any case is still too litle known to enable us to identify them with precision.

In regard to the second general division, in which the disordered impressions are conveyed from some remote peripheral nerve to the brain, spinal marrow, or to some ganglion, your future practice will furnish you with many examples. Thus, in respect to the brain, Andral relates the case of a robust man, forty-five years of age, who, when he entered the hospital, was in such a state of delirium that no account of his history could be obtained. Next day his eyes were haggard, there was *risus sardonicus*, taciturnity, and when the belly or any of the limbs were pressed, the countenance expressed pain. He died in the evening; and on dissection, the brain and its membranes were found healthy and there was no effusion, the only lesion being in the stomach, which presented several recent ulcerations, and increased vascularity. And one very remarkable case of the same kind has occurred to myself since I first quoted the work of the eminent French pathologist. Instances, again, of more or less violent cerebral affection, are often met with in this hospital, in which, after death, the brain exhibits little that is abnormal, and the principal change of structure is found in the glands of the ileum, and in the mucous lining of the intestines, although these during life did not manifest particular disturbance.

I have just, in private practice, lost a little boy who presented another modification of the same fact. A short fever, which combined in it catarrh and tonsillitis with neuralgia of the neck and scalp, was epidemic in the city and in the family. A brother of the child and himself were affected by it, and suffered from periodical exacerbations of pain in the occipital, frontal, and facial nerves, and from vomiting. In the one, recovery took place in a couple of days; but in the other, who was a delicate child, with emphysematous lungs and dilated right heart, the symptoms were protracted for thirteen days, when they became complicated with partial insensibility of the optic nerves, and in twenty hours more with loss of consciousness and with convulsions, under which he in a few hours more died. Here the disordered action in the superficial cephalic nerves appears to have radiated towards the predisposed brain.

Again, in regard to a similar afferent disordered communication towards the *medulla spinalis,* we frequently have cases up stairs of spinal irritation, which are secondary on gastro-enteritis, on tubercle, or on inflammation situated in the lungs, heart, kidneys, bladder of urine, and uterus.

Another modification of these signs is where the disorder thus generated in the nervous centres, or at the free surface of peripheral nerves, is reflected from the respective terminations of these to other systems. The tumultuary disturbance of the circulatory, digestive, and cutaneous systems, which succeeds the sedative influence on the brain of the poison of typhus fever, and the sometimes impaired and at others augmented action of various organs which attends cerebritis, are examples of the first form of this reflex secondary transmission.

Examples of the second form are constantly coming in our way. One of the most familiar is observed in the effects of sudden inflation of the bowels in individuals with a tender state of the spinal nerves. In such persons the functional powers of the organic nerves are often impaired, and the parties are subject to the sudden disengagement in the intestines of immense volumes of gas. At such times the tender intestinal nerves are irritated, the impression is carried to the back, and is thence reflected along the intercostals to the cardiac plexus; and functional disturbance of the heart, accompanied by exhaustion, a sense of dying, or by actual syncope, is the result. The aggravation of *ischias nervosa,* by loaded bowels, and the paraplegia of children from disorder of the digestive organs, illustrate a similar principle.

A variety of the same pathological state occurred here lately, in a woman who had swallowed three teaspoonfuls of arsenic. The largeness of the dose, by occasioning vomiting and purging, prevented immediate death; but a violent gastro-enteritis, and a painful paralysis of the limbs took place, and, frequently, corresponding with the situation of these neuralgiæ, a *herpes circinatus* made its appearance. Here, then, the irritation reflected, first, from the inflamed intestines to the *medulla spinalis*, from this to the nerves of the extremities, involved next the capillaries of the cutis, giving rise to inflammation of this tissue, and effusion under the cuticle. I apprehend that the well-known *herpes zoster* has a similar splanchnic origin; and it is on the same principle that I explain the papular eruption on the trunk, which often takes place in enteric fever, and sometimes in pneumonia and tubercular consumption, and also the cutaneous rash in some descriptions of erysipelas. The accurate limitation of this disease often to one side of the body, seems thus to correspond with the arrangement of the cutaneous nerves.

When the irritation proceeds from the uterus, as in what are called hysterical cases, the secondary lesions of organs are often most remarkable. The lower jaw in one woman whom I treated, became thus subject to be spasmodically raised with great suddenness and violence, thereby wounding the tongue. Sometimes the respiratory nerves bear the chief onset of the disturbing influence which reaches the *medulla spinalis* from the womb, and there is instantly set up all the phenomena of an asthmatic paroxysm. In one such case which I witnessed the glottis became spasmodically closed, and the windpipe was cut open to preserve life; and in another female under my care, who was recovering from an abortion, the spasm of the larynx actually occasioned death. In a third individual, a young unmarried lady, it was the left mamma which sympathised with the spinal and uterine disturbance, and suppuration of the breast was the remarkable result. In a fourth case, also occurring under my own superintendence, the right kidney, the bladder of urine, and the right anterior crural nerve, were the parts which suffered. The pain and strangury were of the most excruciating kind, and on the anterior aspect of the ankle-joint there was a pustular sore not larger at first than a barleycorn. This, on every occasion of nephralgia, got red and extended, till at length the joint was laid open by it, and amputation had to be performed. For about a year afterwards, the situation of the anterior crural nerve on the stump became inflamed, when the kidney was affected, just as had formerly happened to the ankle. An issue was introduced over the tract of the nerve on the face of the thigh with advantage, and now the poor woman seems to have outlived the hysteria; she has ceased to be affected with spinal irritation, and walks about with a wooden leg at the age of from fifty to sixty, in perfect health.

When speaking of the nervous system, I may remark that there is no more fertile source of erroneous medical practice than neuralgic pains, whether these be organic or merely parietal.

The most commonly mistaken, perhaps, is that which is situated over the liver, next to which, probably, is that met with in the region of the heart, or that in the eyes and forehead from rheumatism of the sub-occipital nerves. It is unfortunately too frequent to meet with delicate anæmic persons who have been blooded generally and locally, blistered, and mercurialized for various inflammations, as of the liver, &c., in whom neuralgia only was the true complaint. The best defence from error in such cases is to apply firm pressure to the root of the corresponding spinal nerve as it passes out from the vertebræ. Should the affection be nervous, pain will, of course, be immediately perceived in the presumed seat of the disease; and along some portion of the neuralgic tract various small, hard bodies, sometimes of the size of a dried pea, may often be perceived. These are fibrinous concretions, the result of effusion from the expansions of the affected nerves on the adjacent tissues. The cases in question are usually of some standing, and there will, besides, be the absence in them of the most if not of all the really diagnostic marks of organic disease.

When such complaints are thus mistreated, they give origin to a state of matters which has often proved opprobrious to the regular practitioner, and a source of much gain to different orders of charlatans, whether medical or pseudo-spiritual. The sufferers are generally unmarried females; and, whether from the affection being hysterical, or that it is limited to the nervous system, its tendency to radiate in every direction is extreme, and its power to disturb the functions of every part to which it extends is most remarkable. All sorts of diseases come thus to be simulated involuntarily to the patient by different organs, the most alarming kaleidoscope-like combinations of symptoms are ever suddenly arising, and as quickly vanishing, to be succeeded by some other; and, in the meanwhile, the sufferer has acquired all the elements of character of a confirmed invalid, and passes successively but fruitlessly through the hands of every medical practitioner, homœpath, dry cupper, hydropath, or caustic monger in her vicinity.

Many such patients are thus confined hopelessly to bed for periods of twenty and thirty years. They have no organic disease, but they are paralyzed in their muscular powers, partly from disuse, and partly perhaps from some irregularity in the supply of nervous energy. If in these circumstances they happen to be exposed to any moral agency sufficient to control the will, the most apparently marvellous consequences follow. I have thus repeatedly, with persons of principle, so situated, broken the spell which bound them to their couch, by explaining to them their real circumstances, and requesting them to give me the aid of their will while I attempted, by the use of country air in a dry house and situation, gradually extended removal from bed, and employment of exercise, tepid or cold water douches on the back, sponging, the saline shower bath, generous diet, and mineral and vegetables tonics to increase their vital powers. On the same principle of influencing the will, I have seen a young lady, who had been, as was supposed, hopelessly confined to bed for a period of six or eight years, terminate a rather rapid convalescence by her marriage; and it is from the operation of a similar cause, although by a different set of means, that the miracles of Irving, Hohenlohe, and others, on young females, bed-ridden by alleged incurable disease in the joints, &c., are to be explained.

One of the most intractable of these cases which I have seen, was an hysterical neuralgia of the stomach. The subject of it, twenty-seven years before, and then a resident in France, fell into the hands of an ardent Broussaist, who removed from her arm 190 ounces of blood in the first three days of his attendance, and applied above 500 leeches to the stomach during the first six months. She escaped with her life, but was left a wreck. The most usual feeling in the stomach was that of its being clenched within the grasp of an iron hand, or being bound down to the back with a bar of iron.

There is a modification of this general neuralgic condition which is often met with in adult females and in males, and which, from the excessive sense of exhaustion which accompanies it, sometimes proves a physical cause of a habit of indulgence in stimulating liquors.*

The individuals in question cannot make even a moderate physical effort, or, particularly when fatigued, take food freely, without experiencing a sense of faintness, and often of impending dissolution. The symptoms arise more readily in cold, damp weather, with prevalence of easterly wind, but are liable to appear at any time that the patient has been perspiring and then suddenly cooled. The complaint is neuralgic-spinal rheumatism of a chronic or asthenic kind, and according to the situation of the spinal nerves, which are its chief seat, will be the accessory symptoms. There may be head, face, or eye ach, accompanied by loss of memory and the power of mental application; or there is a desire for frequent deep inspirations, and indulgence in moaning and lying down on the floor or on a sofa; and, often, there is a sudden distension of the stomach and intestines with air, which requires that the clothes be loosened, and which sometimes occasions great disturbance of the heart's action. It is in such emergencies that the craving for stimulants is chiefly felt, to the gratifying which we cannot be too solicitous to withhold our sanction.

The persons predisposed to this affection have usually a highly perspirable state of the skin, and I presume that its proximate cause is vascular congestion of the neurilema, and enclosed neurine of some of the spinal and splanchnic nerves. The principle of every detail of treatment found beneficial in arresting the complaint appears to be the unloading of the capillary cutaneous exhalants situated in the vicinity of the affected nerves, and consequently the equalisation of the circulation in these; while those means which experience has shown to be best adapted to prevent recurrence of the disease, are such as are calculated to hinder this irregular distribution of the blood. External heat, general and local, by inducing perspiration from the part or from the general surface, instantly relieves the pains; Sterry's tar paper, cut into short, narrow slips, and so applied wherever there is pain, that the external air be quite excluded, does the same thing, and, I presume, on the same principle; while, as regards prevention, systematic frictions of the spine with ether or with the nitromuriatic acid lotion, and the daily employment of the tepid saline shower-bath or of a light cold water douche to the back, along with the careful adaptation to the tender parts, if required, of folds of highly dried flannel, carefully renewed every twenty-four hours, are the most efficacious means.

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* *Vide* Remarks on some of the Physical Effects on the Human System of the Habitual Use of Distilled Spirit. By Charles Ritchie, Member of the Faculty of Physicians and Surgeons, Glasgow.—Glasgow Med. Journal, Vol. iv., 1830.

It is no doubt true, that, in patients in whom the affection has extended to the nerves branching upon the alimentary canal, various kinds of irritation, acting on the expansions of these on the mucous surface, will have their disordered impressions carried to the weakened spinal nerves with the effect of exciting all the phenomena of an attack, such as the application of cold and moisture to the cutaneous periphery will occasion; and in such cases the addition of appropriate internal treatment will be required. Of these, the alkalies, combined with colchicum, and followed by some tonic, as quinine or strychnia, along with counter irritation to the abdomen, are the most useful.

The details into which I have here entered are presented as specimens of the considerations connected with the due investigation of the morbid signs presented by the cerebro-spinal and ganglionic system; and, in concluding this head, I would just advert for a few minutes to a situation, having immediate relation to this inquiry, in which you will often find yourself painfully placed, especially when practising amongst the children and domestics of the upper classes. I refer to your being called on to decide categorically whether a given case be one of fever,—of fever calling for removal,—or whether, as in children, the symptoms are those of some contagious febrile eruption.

The nervous centres are disturbed in every pyrexial condition, whether this has been excited by an animal or paludal poison, or by local inflammation; and when requested to speak to the special denomination of an early febrile attack, this is the first fact which falls to be remembered.

In the instances I at present contemplate, you are ordinarily consulted on the second or third day. In the case of a child, it may be arachnitis, pneumonia, or some other of the phlegmasiæ; or it may be an eruptive disease, an acute indigestion, a mere chill, a remittent fever, or simply the effects of teething, which you are called to treat; and in an adult it may be any of the pyrexiæ.

On the supposition of an inflammation, there will be some rational or local physical sign present which will serve to guide you; and on the question of an exantheme, there will, should the case have reached the third day, be some appearance on the neck or face, the conjunctivæ, or the fauces, which will indicate, and, when compared with the history of the seizure, which may even determine the case.

When the inquiry has thus become narrowed to fever alone, the question of its generic nature,—whether an ephemeral, a gastro-hepatic, a typhoid, or a typhus fever, will next be raised, and it is here that the main difficulty lies. In ephemera the symptoms will have begun to decline by the third day. In gastro-hepatic or short, bilious, relapsing fever, on the contrary, and also in typhus and typhoid fever, the symptoms may be very intense on the third day, although, as a general rule, typhus is less tumultuous in its onset than either of the other two; and while the functional disturbance of the stomach and liver in gastro-hepatic, and of the intestines and bronchial membrane in typhoid fever, are usually the most remarkable lesions, in typhus it is the cerebro-spinal axis and its dependencies which at this early stage suffer most. From the fifth to the seventh day of typhus there will, with other symptoms, be, in general, a disappearance of the visible impulse of the heart on the thoracic wall, some shortening of the first cardiac sound, a slight want of parallelism in the eyes, and an eruption on the skin; and, at this period, a gastro-hepatic fever will have attained a crisis; but on the third or any other day short of the fifth or sixth, I am not acquainted with any signs which authorise an absolute decision that a given case is one of typhus. You are warranted, indeed, in this fever to expect that there shall have been an introductory period of diminished vital power, accompanied and succeeded by a rigor, some continued sense of coldness, irritability of the feelings, head, back, and limb aches, *tinnitus aurium*, depraved sense of smell and of taste, intolerance of light, of noise, and of pressure on the cutaneous surface, and when several of these symptoms are present on the third or fourth day, or when there is sleeplessness or painful dreams, a soft pulse of about 96, and obscure, occasional, but distinct starting of single tendons, say in the wrist,—there is certainly a strong probability that in due time the eruption of typhus will appear. But I cannot leave this subject without insisting on the often fallacious nature of a diagnosis in such emergencies, and on the reckless cruelty and serious responsibility which attach to the conduct of the medical man, who orders a friendless servant to a fever hospital on other than positive proof that such party is the subject of a contagious febrile disease.

13. *Morbid Signs in Respiratory Organs.*

a. Voice.—Whether rough, stridulous, vibrating against hand on walls of thorax, or lost.

b. Ribs.—Incurvated, immovable, or otherwise.

c. Intercostal spaces.—Projecting, indented, or natural.

d. Inspirations.—Number, regularity of succession, and whether shallow, or abdominal and diaphragmatic.

e. Expirations.—The relative length of their murmur, and the quantity of air expired.

There is often some difficulty in determining the precise frequency of the respirations when your patient retains consciousness. Any suspicion he may have of your object will modify the character of the breathing, and when practicable, it is preferable, therefore, to examine this point when the patient is asleep. Sometimes, when the breathing is noisy, its frequency may be ascertained by the ear; at other times it is requisite to use your eye, and, in this case, the best plan is to place your watch on the bedclothes covering the patient's stomach, and, taking his hand into your own, his mind becomes absorbed with the notion that you are counting his pulse.

It may be safely assumed as true, that, when the number of inspirations is twice as great as the normal frequency at the same age in health, you have a grave and doubtful case; and, that when the amount is permanently greater than this, there is small prospect of recovery. The diminution in frequency of the respiration is still more important than its augmentation, and a rate of breathing, which is sometimes the one and sometimes the other, is of more dangerous import than either.

f. Expiration.—Number of cubic inches. The average air expired by an adult male is two hundred cubic inches, rising in well-formed individuals in good condition to an average of two hundred and forty inches, and falling in certain artisans, whose employments are injurious to the lungs, as low as one hundred and eighty inches.

g. Admeasurement of thorax.—The average admeasurement of artisans around the thorax is about thirty-six inches; but in weavers, shoemakers, and tailors, and in persons predisposed to consumption, it falls below this; and, sometimes, as in empyema, disease of the heart, aneurism, and malignant tumours, the one side of the thorax is one inch, or perhaps even more, larger or smaller than the other. In emphysema of the lungs the thoracic circumference may be as high as forty inches, and the appearance of the chest be very imposing, but the absence of the normal dulness on percussion at the cartilage of the left fifth rib will reveal the true state of the case.

h. Sounds elicited by percussion.

i. Sounds heard by stethoscope.—Of these, so copiously treated in books, and with us matters of such continual reference and requiring so much to be said, I need not here speak.

j. Cough.—Laryngeal, bronchial, paroxysmal, convulsive.

Under what I call laryngeal we have the short, dry cough, referred to the larynx as its seat, which is so distinctive of the first stage of tubercle, and which, I presume, is produced by the transmission of irritation from the pulmonary cells, along the recurrent branches of the eighth pair, to the glottis. On the same principle it is you account for what are called sympathetic coughs, such as the liver, stomach, and hysteric cough, which are all, when unmixed, laryngeal coughs; and the very characteristic cough of aneurism of the aorta, and of sinistral disease of the heart, belongs to the same category. They are all, as a general rule, simple expiratory coughs. The bronchial cough is sufficiently obvious. It is felt by the patient to proceed from some portion or from the whole of the breast, and is present in every stage of every inflammatory disease of any part of the pulmonary tissue, from the mildest catarrh to the most advanced consumption, and, as a general rule, involves the inspiration along with the expiration.

With regard to the other two modifications of cough which I have mentioned,—that occurring in paroxysms, and the convulsive,—they are, with the exception of one or two instances of laryngeal cough, such as that of spasmodic croup, all examples of what I have called bronchial cough, and owe their peculiar character simply, in my opinion, to the great quantity, or viscidity, or both, of the expectoration. I do not exclude hooping-cough even from this rule; the occlusion of the glottis, sometimes by the continued flow, at others by the adhesiveness, and, as in the case of spasmodic croup, and partially in hooping-cough, sometimes by the irritability of the larynx itself, being often, at least the exclusive cause of the protracted and stridulous cough.

k. Expectoration.—Its quantity, taste, smell, viscidity, appearance with naked eye, with microscope, and when mixed with water or reagents.

These properties of sputum vary as it proceeds from the bronchial lining, the pulmonary parenchyma, or the air cells. In the first case, there is every variety of physical aspect, from the copious, limpid, frothy, and slightly saline, and glairy discharge of catarrh, to the ponderous, inspissated, sweet-tasted, green, or yellow pellets of the same affection in its decline; and from the less profuse and frothy, but more serous, viscid, and saline expectoration of acute bronchitis, to the insipid, diffluent, yellow, and sometimes fœtid sputum of the chronic form of the same disease.

Then, in respect to the second general variety of sputum, or that of inflammation of the serous tissue of the lungs, you have it constituted of the secretion of the bronchial lining as its base but in very diminished quantity, compared with the severity of the disease, and so concentrated, that it is without air globules, and of extreme tenacity; while, according to the quantity of red globules which exudes with this highly albuminous secretion, it is changed from its natural resemblance to white of egg, to a gamboge yellow, a red, or a prune juice colour.

And in regard to the third division, or that which has reference to abnormal deposits,—as of tuberculous matter,—in the pulmonary cells, it is rare that this is expectorated alone or in quantities, the more usual mode of its discharge being in minute streaks or masses, mixed with serous fluid or pus from the bronchiæ and cavities, and giving to water in which it is triturated, a milky appearance, or exhibiting, under the microscope, a granular matter, mixed sometimes with the fibrous tissue of the lungs.

l. Odour of breath.

This has regard to the mercurial breath, the breath of indigestion, that of gangrene of the lungs, of pulmonary suppuration, of syphilitic ulceration of the pituitary membrane (identical with the fœtor of the *tritus cimice lectus*), and, lastly, to that of the hay-smelled breath of peritonitis.

I have often been strongly arrested by this last peculiarity of the breath, which I am not aware to have been spoken of by any who have treated of abdominal inflammation; and when I have met with it, I have uniformly done so in connection with that state of disease.

14. *Circulatory Organs.*

a. Impulse of heart; whether extended, violent, interrupted, purring, weak, lost to the eye, touch, or stethoscope; or normal, and as felt in different postures.

Thus, besides the functional disturbances of the heart, which often exhibit diffused, and sometimes most tumultuous heaving of the thorax, any organic cause which brings the heart nearer to the ribs, or removes its usual superimposed lung, will have the same effect. I need only mention hypertrophy of the heart, its agglutination to the pericardium, or collapse of the left lung, either partially by adhesions, or, more entirely, by effused air or serum. In an opposite state, again, as in emphysema, in which the heart is often buried under the expanded lungs, and in typhus, after the seventh day, and the stage of exhaustion of many acute diseases, in which the contractility of the heart's fibres is much impaired, there is little or no cardiac impulse, and that even when the patient reclines forward or to the left, or makes a long expiration.

b. Percussion of cardiac region during inspiration and expiration, and as affected by position.

c. Sounds of heart, as heard,—first, along the course of the pulmonary artery and right ventricle, from the cartilage of the second left rib to that of the fourth right rib, and downward to the bottom of the sternum; second, along the left heart, from the right carotid artery, the *arteria innominata*, the ascending aorta, the aortic orifice, and the apex, to the mitral foramen at the external edge of the left nipple.*

No observations on the heart are worthy of trust which do not include a careful inspection by the hand and eye, and also an examination of all the points mentioned under the present head, both in a state of bodily rest and of recent muscular effort. There are many cases of enlargement of the heart which are destitute of a murmur; and there are some severe lesions of the left heart, which a smart walk is sufficient to destroy the auscultatory evidence of; and there are others of a slighter kind, and some advanced examples even of disease of the right heart, in which this organ emits a disordered sound only after exertion.

d. Rhythm of the heart.

This has regard both to the relative duration of the various parts of each revolution of the heart, and to the proportion or order of the pulsations as compared with one another.

In a state of health, the time occupied by the systole of the heart alone is equal to that required for the diastole and rest combined; and it is found that, in proportion to the vigour and integrity of the vital powers, so is the sustained regularity of these relations; or, conversely, that according to the feebleness of the muscular energy is the due adjustment of the different parts of the heart's revolution disturbed. In powerful muscular animals, as the lion and the elephant, for example, the sounds of the heart possess an obtuse, measured, and sustained character. The same thing holds in strong men, and I make use of the knowledge of the fact, in estimating the amount of constitutional vigour, as often as I examine any one for an assurance society. In feeble animals, and in persons of indifferent health, on the contrary, the rhythm of the heart is easily disturbed, and in certain diseases, accompanied by diminished vital power, the relative duration of the sounds of the organ are actually reversed.

Dr Stokes of Dublin pointed out, a few years ago, that in the collapse stage of typhus fever there is a gradual subsidence of the impulse and first sound of the heart, and he supposed that these phenomena are occasioned by softening of the left ventricle.

I have seen softness of the heart repeatedly in typhus patients, in whom the sounds of the organ had not acquired this peculiarity. In one, a girl of sixteen years of age, who died under sudden stupor, as early as the sixth day of the disease, and in whom the cardiac sounds had been double, and of a clear, metallic, ringing character, similar to that elicited by the stroke of a small hammer on an anvil, there was remarkable softening of the whole of the muscular structure of the heart, along with the ordinary necroscopical appearances of typhus. In another, who died from sudden collapse on the eleventh day of typhus, the report the day before death is—"Impulse of heart good. Sounds good; the second loudest at the base of the heart, the first, normal;" and in the account of the inspection it is said—"Heart's substance much softer than natural, and altogether destitute of its fibrous character, having a resemblance to boiled ham." Besides this, it is a not unfrequent thing to meet with a typhus patient, say on the morning of the fifteenth day of the disease, having the systolic sound of the heart extinguished, and to find the same patient in the afternoon with double and excited heart sounds, in consequence of the accession in the interim of some local inflammation,—an occurrence which it is difficult to understand, on the supposition that the extinction in question is dependent on softening of the heart.

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* Clinical Contributions to the Pathology, Diagnosis, and Treatment of certain Chronic Diseases of the Heart. By Charles Ritchie, M.D.—Edinburgh Medical and Surgical Journal, Vols. lxxii., lxxii. Vide p. 4, Vol. lxxiii.

Dr Stokes believed that this softening of the heart exists in typhus as a local lesion without any analogous condition of the muscles of voluntary life. I confess that I have felt surprised at this statement of Dr Stokes, as it is familiar to every one who has observed the muscles of subjects dead from typhus, that they are always friable, and that they are often very soft. The condition of the heart's fibres in typhus generally corresponds with that of the other muscles in the same disease; but if the debility which the absorption of the cardiac impulse and first sound indicates, arises only from this softening, then this pathological state is not confined to typhus. Loss of cardiac impulse and systolic sound are as conspicuous in certain stages of aggravated variola, and in some cases of gastro-hepatic, or short relapsing bilious fever, at the crisis, as they are in typhus. In the first shock of all severe accidents, also, the same arrangement occurs. In the examples of smashed limbs, extensive burns, and injuries of every kind so common in the surgical wards; in profuse uterine hemorrhage, in the collapse period of many cases of Asiatic cholera, in the debility induced by chloroform, and in that of the more ordinary forms of drunkenness, there is often a more or less perfect extinction of the impulse and first sound of the heart. I have observed the same appearances, and that also in highly robust men, after excessive sexual indulgence, and they are not uncommon features in the convalescing stage of acute febrile disorders of any kind. In the period of crisis of gastro-hepatic fever, the rhythm of the heart may often be found entirely normal, or with some preponderance even of the first sound, at the moment the patient is falling into the profuse sweat which terminates the pyrexial stage, and in an hour or two later the diastolic cardiac sound is all that remains.

The observation of this disturbance of the heart's sounds is of much practical importance in determining the choice of a proper time for amputating compound fractures, and also the most suitable treatment to be adopted in burns; and, although differing from the distinguished physician I have referred to, in that I think the symptoms in question indicative rather of diminished vital power or nervous energy than of local softening of the heart, there can be one opinion only on their significance, as importing a condition of dangerous debility, and as demanding a corresponding employment of stimulants.

e. State of the arteries. If you press with your stethoscope on the femoral artery in the groin of a robust, athletic man, in the acute stage of pneumonia, all that you are sensible of is a violent rebound of the vessel against your instrument. It is as incompressible as a metal tube, and communicates to the ear of the observer an impulse merely, without any sound. On the detraction of blood from such a patient, however, or the exhibition of the tartrate of antimony, the force of the impulse becomes lessened, and pressure with the stethoscope elicits a bellows murmur sound which is sonorous and sustained in what appears to be a pretty exact proportion to the intensity of the disease, or the vigour of the constitution. At the outset of the experiment, the contraction of the vessel on its contents is perfect, and the precise adaptation of its rigid coats to the enclosed column of fluid does not admit of such an alteration in the relations of the two, as is compatible with the production of a friction sound; but, according as the tonicity of the circulatory system becomes lowered, the walls of the artery more readily approximate one another on the application of slighter degrees of pressure, and the bruit which is generated by the stethoscope diminishes in length and strength in proportion to the nearness to each other of the sides of the vessel. Thus, if you take an adult male in the stage of acute reaction of typhus, or from the fourth to the seventh day, you will find the femoral artery very much as I have described it after bloodletting or antimony in pneumonia; and if you follow the case into the period of collapse, you will observe the vessel increasing in compressibility, and the bellows murmur in shortness and feebleness, till at length it ceases altogether on the slightest pressure. I am accustomed to form my estimate of a patient's strength in typhus and other diseases by this indication, conjointly with other methods; and I have frequently been able, under its guidance, to anticipate, and, I think, to moderate, the stage of debility, by the early use of wine.

f. Pulse.—1. Frequency; 2. quickness; 3. strength; 4. fulness; 5. regularity; 6. impulsiveness; 7. hardness.

It will not be expected that I should speak particularly on this topic, but there are some practical suggestions in regard to it as a means of diagnosis, which, in an address to individuals about to enter practice, I would not wholly pass over. The first of these which I would mention is,—

1. That you should always mark the pulsations by a watch, and never guess them.

2. Let the pulse be taken the first thing, and again the last thing you do, before committing yourself in an opinion.

3. Never be satisfied in important cases with a shorter observation than one half minute, and always compare it with another similar, but not quite consecutive.

4. Compare the pulsations at the wrist with those at the heart; and when they happen to be feeble in one arm, observe their condition in the other.

5. Always have reference, in estimating the pulse, to the influence which may be had on it of the posture of the patient, and also of his emotions.

6. Never forget that your own countenance and manner are objects of keen observation to every patient whose pulse you happen to take.

There is an interesting question of extreme practical moment, to which, as I have now alluded to most of the elements which it comprises, I may as well direct your attention under the present head. I refer to the signs by which the propriety, or otherwise, of commencing the use of wine,—as, for example, in fever,—may be determined, and by which, also, we may judge of the quantity which should be employed.

These signs in typhus are, all of them, the result of depressed nervous power, and they are appreciable in every portion of the organism; but they may be conveniently regarded, as they arise immediately from the condition of the nervous centres, or mediately through the weakened state of the heart, of the general muscular system, or of the viscera.

The period of the fever when there is any difficulty in determining the propriety of giving stimulants in typhus, is the second seven days. The first week is normally one of arterial reaction, when the question of stimulation will never be raised, but according as this subsides, or throughout the second week, venous congestion predominates. In the crisis, on the fourteenth day, unless its accomplishment be marred by the accession of a complication, the subsidence of the animal powers is so apparent, that the least initiated may detect and counteract it; but in the week which precedes this, there is a blending of opposite states,—of what appears to be febrile reaction, along with intense prostration, so confusing, that except one knows the precise pathological meaning of the symptoms as they arise, and be able to balance justly their aggregate import, much injury must ensue.

I have seen the abatement of the tumultuary action which distinguishes the greater part of the first week of typhus, so marked on the seventh day, that it looked like an intermission; but, more commonly, there is an amelioration only of the restlessness, flushing, and general excitement at this period, followed by an insidious approach and accumulation of the signs of debility.

1. The mind becomes more torpid than formerly; there is commencing confusion of ideas, and the emotions often acquire a gloomy complexion. Some patients weep from time to time at this stage, and there is in these and other cases a presentiment of death.

2. An expressed sense of weakness and a desire for stimulus do not happen so often with typhus as with typhoid patients, but when met with, the latter feeling may safely be gratified in typhus, while it can seldom be so in typhoid fever.

3. It is more usual in typhus, that, just as the animal powers yield, a disposition to doze and to be quiet, and a reluctance and a slowness to answer questions arise. The muscular system becomes progressively inert. The palpebræ, when the patient is awake, are seen to rest permanently farther down on the eyes than usual; and when he is asleep, the white of the eyes is more exposed than natural. During sleep, also, the mouth is, from the same cause, more frequently open, and the relaxation of the *velum* of the palate often occasions noisy breathing. At this time too, the patient begins to fall over on his back, and, as the loss of muscular vigour proceeds, he slides downwards on the bed. The muscular coat of the digestive tube partakes of the general loss of power, and meteorism is the consequence. The sensibility of the iris is also weakened, and dilatation of the pupils supervenes. Should the patient attempt to get up, an approach to syncope is occasioned, and, as the feebleness augments, the evacuations require to be discharged in bed. In bad cases all the involuntary muscles suffer both in sensibility and power, and there is either retention of urine and of the contents of the bowels, or these are voided in unconsciousness. In still worse circumstances, the patient complains that a single limb, or both, are heavy and powerless, and in a few hours more the individual dies under a similar arrest of nervous energy in the rest of the voluntary muscles.

I presume that I am strictly correct in thus arranging these varied appearances under the one category of a lesion of the vital powers manifested in the muscular organism; and the same remark applies to those changes in the impulse and sounds of the heart, and in the pulse and arterial system, to which more or less reference has been repeatedly made under other heads.

My habit in fever practice is to ascertain the character of the heart's impulse and sounds as regularly as I do the frequency and strength of the pulse. When you place a healthy person on his back, the impulse of the heart is visible between the fifth and sixth ribs; but there are few cases of typhus in which this can be seen after the ninth or tenth day, and in most instances it is impossible to do so even as early as the seventh or eighth. At this time the impulse is often even scarcely to be felt with the finger; and along with this alteration there is a sensible shortening of the systolic sound. As the weakness augments, the frequency of the pulse in general increases, and the sounds of the heart, as heard with the stethoscope, acquire a fœtal character; that is, they are not only frequent, but quick also, and sharp and distant, and there is perceived to be a diminution in the length of both the systolic and diastolic sounds, along with a feebleness or the entire absence of the impulse. In the farther progress of the heart's debility the first sound becomes extinguished at the base and ultimately over the more superficial parts of the organ; and often, previous to death, both the first and second sounds, as well as the impulse cease to be recognizable by the stethoscope. In individuals in whom the cardiac sounds happen from previous disease to be habitually obscured by abnormal murmurs, the subsiding of these latter also occurs as the debility proceeds.

As to the changes effected on the pulse in the collapse period of typhus, considered as indications of increasing debility, they depend either on the participation of the arteries as muscular tubes in the general loss of nervous power, of which I have already spoken, or, at a more advanced stage of the collapse, on the diminished quantity of blood which is in the arteries, owing to the accumulation of this fluid at that time in the visceral veins. The first effect on the pulse of the lowered power of the heart is increase of frequency, and the earliest indication of the lessened resiliency of the arteries is a loss of firmness in the pulse. As the circulatory feebleness becomes greater, a sensible want of synchronism between the cardiac and radial pulse is often appreciable from the same cause; and sometimes this condition gets so remarkable, that the pulse appears to have become intermittent. When the failure of the animal powers has attained to the extent of affecting the size of the arterial wave, diminished fulness, or absolute smallness of the pulse are observed.

4. The lesion of the vital powers in typhus gives rise to other changes in the circulatory organs, besides those which have been referred to as manifested on the heart and larger vessels. I allude to those effected in the capillary or peripheral circulation. One

of the earliest of these is the exchange of more or less paleness of the face and general surface, for the flushed countenance and vascular skin of the irritative or tumultuary stage of the complaint; and the next in order is a gradual darkening of the colour of the *typhus macules*, first on the dorsal aspect of the patient, and afterwards on the other parts. This is soon succeeded by a copper hue of the face, which may often be observed also on the feet, accompanied by a crimson colour of the skin in the situation of former sinapisms or blisters, and sometimes by lividity of the nails, congestion of the conjunctivæ, and vibices.

5. The culminating effect of the loss of nervous power which obtains in typhus is splanchnic congestion.

The more moderate degrees of this state are simultaneous with the pallor of the face, the duskiness of the skin, and eruption, and the failure of the cardiac impulse and systole, and the more intense with the lurid hue of the countenance, the lividity of the nails, the occurrence of vibices, and the presence of an enfeebled, frequent, and quick single or diastolic sound of the heart and radial pulse.

One of the earliest situations in which this hyperemia becomes obvious is the bronchial membrane, where it gives rise to moist crepitus, bronchitic rhonchi, acceleration of breathing, cough, and inflation of the nostrils without pain of chest, and simulates so accurately the symptoms of bronchitis, as to be often mistaken and mistreated for that disease.

Another of the organs which gives early intimation of the presence in it of an undue proportion of black blood is the brain. The suffusion of the eyes supplies us with an unerring physical sign of the condition of the venous system of the brain at an early period. The immediate confluence of the ophthalmic veins into the cavernous sinus of the brain explains this. In regard to vital signs, I have already spoken of the drowsiness, sopor, and inaction of the muscles which indicate cerebral oppression; and as the venous congestion proceeds, these conditions become proportionally accumulated.

A moderate measure of abdominal plethora is sometimes manifested by the induction of bilious purging or of diuresis, and a greater amount by the arrest of these secretions, the bile becoming thick, tarry, and scanty, and the urine small in quantity.

When the recession of the blood and the general congestion of the organs attain the fullest extent, the surface and countenance shrink, precordial oppression becomes extreme, jactitation and rapid abdominal or stertorous breathing occur, and death ensues.

Following these views of the pathology of typhus, it is my usual practice, when I observe that the patient, during the currency of the second week,—say from the seventh to the eleventh day,—has acquired a pale or saturnine look, a suffused eye, or is less observant of the presence of his attendants, and disposed to be silent, and to lie on his back, and to doze much; that the pulse is becoming somewhat more frequent and is soft, the dorsal rash copper-coloured, the impulse of the heart gone, and the first cardiac sound in process of becoming shortened,—to give a small quantity of wine, half an ounce at least, every three hours, with the intention of preventing the coming collapse. Should the tongue be at the same time protrudable, and moist and cool, this will no doubt form an additional guarantee for the propriety of the treatment, although inability to thrust out the tongue, owing to its having become dry and shrivelled, as this often arises from the patient sleeping with his mouth wide opened, is far from being an objection to the same course.

In proportion as the venous congestion of the organism becomes more marked, the frequency and also the quantity of the doses of stimulus exhibited must of course be increased, it may be to the extent of one, and in some rare instances of two, ounces in the hour; the only circumstance to be guarded against being the reappearance of arterial reaction. Visible pulsation in the carotids is probably the earliest and most indubitable proof of this reaction having commenced.

g. State of the veins, varicose, pulsating, or with murmurs.

I shall speak only of one of these points,—enlargement of the superficial veins; an appearance which always indicates deep seated venous obstruction somewhere nearer the right side of the heart than the varicosed cutaneous vein. Thus, turgidity of the cephalic veins, increased during expiration, is present in obstruction of the circulation through the heart. A similar condition of the brachial veins of either side, according as the disease is in the ascending aorta or arch, is symptomatic of aortic aneurism, or of a malignant tumour in the lungs. Great enlargement of the mammary and epigastric veins of the right side is frequent in obstructed circulation of the liver; and I have noticed the same thing, and also, after death, the distension of the mesenteric veins, in diabetes, I suppose from an identical cause. An increase in the diameter of the same veins, sometimes to that of a finger, is an accompaniment of obstruction of the *vena cava* within the abdomen. Just as metrorrhagia has been believed to be produced by a similar cause in the female, a frequent origin of spermatic varix in the male, particularly of the left side, is habitual impaction of the sigmoid flexure of the colon. The distended state of the vaginal and crural veins in pregnancy, and its source in the pressure of the gravid uterus on the pelvic trunks, is known to every one; and I have sometimes been able to distinguish the diseased from the sound ovary in ovarian dropsy, by noting the enlarged saphena of the corresponding side. Again, a young man was admitted last winter into ward 3, having great debility, extreme emaciation, bloody urine, a pulse of 140, and extreme pain in left renal region. In a day or two, a clear, œdematous swelling of the left leg and thigh, and, in a few days more, an engorgement of the left epigastric vein, with tenderness of the groin, appeared. In another ten days the opposite side passed through the same changes, and in two months he died, apparently from the bursting of an acute abscess in the right lung. On inspection, the right kidney was found much enlarged, and the left a mass of suppurating tubercles; the external iliac veins on both sides being plugged up with fibrinous clots smeared with pus. Here, then, is extension of inflammation from the ureters to the iliac veins, occasioning hindrance of their circulation, *phlegmasia dolens* of the limbs, with distension of the superficial abdominal veins; and I would suggest this latter circumstance, as a mean of distinguishing those cases of *phlegmasia dolens* which are dependent on obstruction of the femoral veins, from those which may arise from inflammation of the inguinal lymphatics, or of the cellular tissue of the limb. I have said obstruction of the femoral veins, because I think serous effusion into the thigh of the puerperal female, proceeds sometimes from a mere lentor of the circulation in these vessels, without the necessary presence there of inflammation. The spermatic and hypogastric veins of the recently delivered female are sometimes found after death collected into large tortuous coils, and their cavities occupied by solid coagula. I have seen this condition, the coats of the vessels being at the same time without inflammation, as late as five weeks after parturition, and from the appearance of the blood I was led to believe that the formation of the clot had been simultaneous with the delivery, just as happens in the uterine sinuses. Might not such a state of these veins so affect the circulation of those of the thigh as to occasion serous effusion?

I pass now to

15. *Morbid Signs in Digestive Organs.*

a. Tongue.
b. Fauces.
c. Pharynx.
d. Œsophagus.
e. Stomach.
f. Intestines.
g. Liver.
h. Spleen.
i. Pancreas.
j. Saliva.
k. Alvine dejections.

16. *Morbid Signs in Urinary Organs.*

a. Kidneys.
b. Ureters.
c. Bladder.
d. Urethra.
e. Quantity and quality of urine.

17. *Morbid Signs in Uterine or Spermatic Organs.*

Taking these varied elements together, I would remark that the institution of a scientific mode of exploration is as attainable and as useful in abdominal as we know it to be in thoracic disease. Thus, to judge of the condition of the œsophagus, we must see the patient swallow, or we take the aid of a prismatic speculum; and sometimes we use the probang. Percussion will detect any remarkable enlargement of the spleen, and, in cases of a doubtful kind, the expedient of causing our patient to swallow a draught of water, by which the stomach gets temporarily expanded by the evolution in it of gas, will assist our inquiries through the change of position thus effected on the spleen. The boundaries of the stomach may, in general, be defined with the finger and percussor while the patient is placed successively in different postures. It and the pancreas ought to be examined when the patient is fasting, and after the colon has been emptied by medicine; and in particular cases of enlarged stomach, we should observe its motions after a meal. To explore the liver, you ought to place the individual successively on the left side and on the back, to retract his limbs and bend his thorax forward; and then, engaging him in conversation on some other subject than his feelings, you employ palpation and percussion to determine the precise state of the organ. The rigidity of the parietal muscles is often difficult to overcome. In such case, search for the aorta as it emerges from the diaphragm, and should you perceive its pulsations in the epigastrium while the patient is placed more or less upright, the liver cannot be enlarged.

I was betrayed once for a little while into mistaking a stomach which was stuffed to distension with human hair for an indurated liver. The epigastrium of a young woman admitted here, affected with vomiting and pain in the abdomen, was found to be filled by a convex, well defined, hard swelling of the shape of the left lobe of the liver, in a state of hypertrophy. The inferior margin of the mass reached to about one inch from the umbilicus, while its upper limits were lost behind the ribs and sternum. Nothing could have simulated an hepatic tumour more naturally; but, on attempting to drag it downwards, a hollow space or cleft began to be perceived in its upper margin. This extended a couple of inches across, and fully one inch towards the spine; and could not, of course, admit any longer of the assumption that the tumour was the liver. After death this hollow was ascertained to be the small curvation of the impacted stomach. The girl had had a practice for many years of swallowing her own hair, which had at length accumulated in the stomach to the extent of nineteen ounces.*

The kidneys are examined with the patient on his back, having his mouth opened, and his limbs flexed, by putting one hand on the dorsal, and the other on the abdominal aspect of the lower part of each gland. The mesentery is best explored by causing the intestines to hang alternately to either side. Pressure directed backward toward the brim of the pelvis, from a point a little upward from the centre of Poupart's ligament, will strike the ovaries, and detect swelling and pain in them, should such exist. The uterus, besides the use of percussion and auscultation, when enlarged, may be examined after the evacuation of the bladder and bowels, while the woman is on her side, having her limbs drawn up, your left hand as deep as may be in the hypogastrium, and the index finger of the right hand on the os and cervix. The state of its posterior wall, and also of the ovaries, may be ascertained while the patient is in the same position, by means of your left index finger introduced within the rectum; and it is worth remembering, that the way to overcome the resistance of the *sphincter ani* to this procedure is to cause its muscle to be put into action.

As to the use of the *speculum vaginæ* and uterine sound, so freely employed in our day, I feel it necessary in an address like this to make one or two remarks.

I could not object to the aid of these instruments by a prudent, well-instructed practitioner, who is familiar with their use, and with the appearances of the parts in health and in disease. I would in that case have a security that their employment was neither gratuitous nor ill executed. But the occasions in which their introduction is really requisite are relatively so rare, and the good obtained from them by an inexperienced practitioner is of such doubtful kind, while the danger to the patient in severe and malignant cases is so great,—peritonitis and gangrene of the parts having sometimes ensued from even their cautious application,—that I am strongly of opinion that their use should not be hazarded by a young practitioner unless under the sanction of a consultation. I may state, as illustrative of this point, that I have had occasion carefully to examine for a special object the uteri of not less than two hundred women who died of general disease, and that I discovered slight ulceration of the organ in no more than about three individuals.

The appearances presented by the tongue in various morbid conditions to which I have referred (15 *a.*) admit of easy arrangement. Thus its aspect will be found to vary as the secretions are increased or diminished, as its capillaries are empty or distended with blood, and as the mouth is habitually open or closed; and it may, therefore, be described either as being

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* See a fuller account of this case in the Edin. Monthly Journal for July 1849, No. 103, p. 931.

Moist and loaded,
Dry and loaded, or
Vascular or anæmic.

In the first of these distinctions, there is every gradation from the moist clean tongue of health, to the moist and loaded tongue of gastric derangement, or of the first stage of fever. In all, the mucous follicles have their action increased, indicative in this of the general constitutional condition, and the fur which accumulates is an excretion from these follicles, coloured sometimes by the contents of the stomach, brought up, it may be, by ciliary motions in the œsophagus. The dry tongue, again, whether covered with the sordes of the former condition, or having a clean, glazed look, points out suppression of the general secretions; and, where it is extreme, it indicates also muscular prostration leading to open-mouthed and abdominal respiration; while, in regard to the vascularity of the tongue, an examination of it may enable us to detect either the diminished blood-globules of chlorosis and other kindred diseases, or the inflamed mucous lining of gastro-enteritis.

The alvine dejections also may be classified according to intelligible principles. Thus, in *quantity* they may be scanty or copious, and in *quality* solid, fluid, well or ill-assimilated; the latter giving rise either to the acetous or putrid fermentations and corresponding sour or fœtid stools. Or the bile may be diminished, occasioning serous, white, or clay-coloured stools; or concentrated, producing green evacuations; or increased, the discharges according to the quantity of bile being either ochre-coloured, yellow, or of the appearance of softened gingerbread; or, lastly, the stools may be mucous or bloody.

I say nothing here of the study of the urine, its importance being at present so strongly felt in the profession, that its leading features must be familiar to you all, nor of the varieties of the uterine discharges and their correspondence, with various morbid conditions of the female genitals; but pass on to

18. *Morbid Signs of the Muscles, Fasciæ, and Tendons.*
19. *Morbid Signs of the Ligaments, Bursæ, and Articulating Cartilages.*
20. *Morbid Signs of the Bones.*
21. *Morbid Signs of the Lymphatic System.*
22. *Morbid Signs of the Adipose and Cellular Tissues.*
23. *Morbid Signs of the Cutaneous Tissue.*

Class III.—The circumstances which refer immediately to the existing indisposition.

1. *Duration of present Illness.*
2. *Premonitory Symptoms.*
3. *Progress.*
4. *Presumed Cause.*
5. *Previous Treatment.*
6. *Continuation of the History and Treatment.*
7. *Termination.*
8. Should the patient die,—*Necroscopic Observations.*

It is in no sense the purport of these explanatory notes on case-taking, to fashion out a formula which shall prove infallible in enabling the young practitioner to diagnose the successive forms of disease which come under his notice, or to indicate any exclusive mode by which even so desirable an object might be attempted. Should the desire of such an inquirer be simply to know his case in order to its practical treatment, any one of the multitude of tests which have been spoken of may possibly be enough to serve his purpose, and I shall be happy in having contributed even in that way along with him to the alleviation of human suffering; but should his views extend to the attainment of a knowledge of the philosophy of disease, he will speedily find that the specialties of individual forms of disordered action often require a fuller development even than any which has yet been referred to in this address.

I would not extend these observations by attempting the proof of this assertion. It will perhaps show quite as well what may sometimes be either needful or useful in such an inquiry, to turn to the outline scheme or schedule, which was formed mainly to determine the general resemblances and differential distinctions between typhus and typhoid or enteric fever.* The principle of its construction was to furnish a mesh-work of so minute and appropriate an adjustment as might best meet the specialties of that particular investigation. In working it in practice it was by no means needful that there should be a strict mechanical adherence to its arrangements. It was enough that these should indicate the kind of information which was wanted, and prove guides and limits to the inquiry.

The space included between the horizontal and vertical letterpress was allotted to the written case. The explanatory notes on the reverse of the plan were used to show the precise kind of details which were required under the respective numbers of the letterpress with which they correspond in the case.†

When thus adverting to the study of fever, I would congratulate you on the unexceptionable footing on which so important a department of your professional training may be prosecuted within those walls.

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* Practical Remarks on the Generic Distinctions between Enteric Fever and Typhus. By Chas. Ritchie, M.D. Edin. Monthly Journ., No. 70. October, 1846.

† It is matter of regret, that the mechanical construction of the schedule renders it impossible to introduce it here, as was proposed. It may be seen, however, at the printing house in Edinburgh, and in the Royal Infirmary, Glasgow.

Down to 1829, fever patients were treated here in the same wards as the patients admitted with general disease. It has of late been strongly urged by our friends in Edinburgh, and also by some elsewhere, that such an arrangement, when under proper conditions,—as, for example, those enforced in respectable families suffering under fever,—is the best possible for a public hospital. I was a student in the Glasgow Infirmary, and acted also as a resident medical clerk, when the mixing plan was the only one adopted, and when the fever patients so admitted were also attempted to be kept as distinct from those affected by other diseases, as was consistent with the method. The occasion of my succeeding to the clerkship was the illness by fever, caught in the general wards, of my predecessor,—a seizure which was soon afterwards followed by that of other two of the gentlemen similarly employed. I cannot forget the feelings of apprehension with which I attended to my duties in these circumstances. It was attempted, indeed, to lessen the danger to the students and other patients, by confining the fever, when possible, to the siderooms. This plan was successful after a fashion, in regard to the students; for they took care to follow the physician only to the door, but, as respected the general patients, it being obviously impossible to subject them continuously, under all the changes of attendants and unguarded intercourse to which they are necessarily exposed, to the strict surveillance that is practicable in a private family (in which the extension of fever is usually prevented), the system was often a disastrous one for them.

Since that time, I have, in my service here as fever-physician, received not fewer than four typhus patients in immediate succession from as many adjacent beds in one of the general wards into which a case of the disease had been accidentally admitted; and during my attendance here in 1842, as physician to the wards for general disease, when, for a short time, patients labouring under gastro-hepatic, or relapsing fever, were admitted by me promiscuously, their segregation required at length to be enforced on account of the frequency of the extension of the disease to the nurses and general patients.

Much has been said in this discussion of the imminent risk incurred by the attendants in a fever hospital, as compared with that encountered in an hospital where the cases are mixed. I have shown what this mixing plan did for us in Glasgow, when it was the only one we had; and now, in regard to the other, it is known to every body here, that when fever is not generally prevalent, many years may elapse without the occurrence of a case of the disease among the physicians, clerks, nurses, or other servants of the fever-house; and that, in point of fact, it is when fever is epidemic only, that these officials suffer. At such a time, the overcrowding, it is true, is always accompanied by casualties among the attendants; but no one will say that, in a season of epidemic fever, these would be fewer were the fever accommodation made to encroach on that of the general wards. In such a conjuncture, the speculations which have been mooted as to how far general hospital patients may be safely exposed to the risk of being killed by the approximation to them of others labouring under fever, would terminate in an instant, and the only inquiry would be as to the best method of obtaining insulation, adequate space, and suitable classification for our fever patients.

It is fortunate that what is thus best fitted to secure the welfare of the general community contributes equally, when really obtained, to the best interests of the patient, and of the clinical student; and in regard to the latter, at least, the conditions I have named can always be procured here, unless on the more than ordinary prevalence of the disease. The clinical physician has only to select, from the fourteen capacious wards of the fever-house, the largest and best aired which he can find, and to place within its spacious and well-washed walls, half a dozen or a dozen of patients, at such intervals from each other as he prefers, and, united to the habitual strict enforcement of cleanliness, which necessarily distinguishes a fever-ward, there is obtained an arrangement of facilities for the study of the disease which cannot be exceeded.

And now, to resume, and also to conclude, it will doubtless have occurred to the minds of some that, even after the extended and diversified examination which has been supposed, and the abundant accumulation of materials which may have been thus obtained, it still remains that, as physicians, we should be duly enlightened in the knowledge of the general principles of disease and of remedial medicine, and be guided, besides, by a sound discriminating judgment, before our labours can terminate in any useful practical result. But on the illustration of this aspect of the subject I do not enter, having, as I suppose, more than established already the statement which I made at the beginning, concerning the onerous position we occupy in these wards, either as it regards the successful issue of the cases as objects of treatment, or their intelligent elucidation and apprehension as matters of science; and it only remains for me to add that, whether as having the responsibility of a professional charge in the curative management of the patients, or the honour to aid you in your investigation of disease, it will be my desire to throw my best energies into my labours in this place, and that the only condition for which I stipulate on your part is, that you wil observe the same rule,—that you will do the same thing.

ART. III.—*Essay on Idiopathic Convulsions of the Face.* By M. V. FRANCOIS, Titular Member of the Royal Academy of Medicine of Belgium. [Memoirs of the Royal Academy of Medicine, Belgium. Volume First. Brussels, 1848, p. 1, Part First.] (Abstract.)

IT appears that, from the earliest periods of the history of medicine, physicians suspected the existence of distinct nerves for sensation and for motion. Supported by the authority of Galen, this opinion was current with several celebrated physicians of the last two centuries, though rather as a presumed than an established principle.[*] It was, in short, in a problematical state; and among the physiologists who attempted, by experiment, to penetrate the mystery of the functions of the animal organism, none thought of applying this method of inquiry to the examination of the sensiferous and motiferous nerves.

To Charles Bell belongs the honour of this discovery, which opens, in truth, a new era in physiology. Originally announced in 1811,[†] it was scarcely made general till 1818; and even in the year 1821, upon the continent it was received with disdain by some, with doubt by others, with favour by the majority. As soon, however, as it became known, it excited, all at once, in France, in Germany, in Italy, and in the country where it was first announced, a great number of experiments, some contradicting, almost all confirming, the opinions of the English physiologist, from the most able men of that time. At the head of these may be placed Bellingeri, Shaw, Magendie, and Muller; next come Herbert Mayo, Schoeps, Beclard, Serres, Rolando, Fodera, Backer, Eschricht, Flourens, Panizza, Jobert de Lamballe, Goedechens, Schwann, Volkmann, Valentin, Longet, and many other inquirers.

[It is probably not historically and chronologically correct to represent the researches and experiments of Bellingeri as having been suggested by the distinctions announced in 1811 by Charles Bell. The small work in which this doctrine was promulgated was not published, and could not have been seen by Bellingeri, whose dissertation, published at Turin, in 1818, contains the earliest exposition of his views on this subject. As, however, this question has been amply examined in the forty-second (1834) and forty-third (1835) volumes of this journal, it is unnecessary to recur to the subject. His own merit may be allowed to Bellingeri without detracting from that of Charles Bell, who certainly was the first in modern times to bring forward the doctrine in such a manner as to invest it with the importance of a general principle.

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[*] Boerhaave Prælectiones de Morbis Nervorum. 2 Tom. 12mo. Lugduni Bat. 1761.

[†] Idea of a New Anatomy of the Brain. London, 1811.

It is very true that the experiments by Bellingeri on nervous antagonism, and those on the spinal marrow, were first performed in 1824, and published in the Transactions of the Royal Academy of Turin in 1826, and that his large work, entitled Reasonings, Experiments, and Pathological Observations in proof of the truth of Nervous Antagonism, was published only in 1833; and it is possible that M. Francois may refer to these performances. But an author who undertakes to furnish correct views on this subject, and to form a just estimate of the comparative merits of each inquirer, ought surely to show, that he allows its just value to the earliest production of Bellingeri, in which the doctrine of distinct sensiferous and motiferous nerves is clearly stated and ably elucidated and corroborated. (See Edinburgh Medical and Surgical Journal, volumes xlii. and xliii.)

In other respects it may be observed that the present author does not assign to several of the labourers in this field of inquiry the exact position of which many English authorities would approve. Surely Mr Mayo is entitled to a higher place than the second in this classification; and to Flourens, Panizza, and perhaps Rolando, most physiologists would agree in ascribing as great merit as to Magendie. Longet is perhaps the writer who has done most to give clear and correct views on this subject.]

As it is not my intention to become the historian of the labours undertaken on this subject, I will not pursue the exposition further. I shall merely say, as an introduction to the memoir which I now present to the Academy, that the principle announced by Charles Bell upon the existence of distinct nerves for sensation and for motion, though it admitted of comparatively easy demonstration as to the spinal nerves, gave rise to animated controversies as to the cranial nerves.* Nevertheless, although the point be not yet generally recognised, or rather admitted, we may consider it at present as a fact supported by adequate proof, that of the three branches of the Tergeminal Nerve or Fifth Pair, the first two, which arise from the Gasserian Ganglion, are purely sensitive; while the third, which arises from a separate root, as Vesalius had already seen, but which receives a branch from the same ganglion, is at the same time sensitive and motiferous, presiding with this last title over the movements of mastication; and the facial nerve is particularly devoted to the movements of the muscles of the face which serve to the expression of physiognomy and respiration. It results from the respective properties of the nerves of the Fifth and of the Seventh Pairs, that we may say, *a priori*, and without fear of error, that the first is the seat of lesion of some kind, when the face is either insensible or the seat of pains more or less acute; and that the last is affected, on the contrary, when palsy or convulsions of the superficial muscles of the face take place.

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* On the priority of the Discoveries made by the moderns on the Nervous System; see Longet, Anatomie et Physiologie de l'Homme, T. i., p. 26, &c. &c. T. ii., p. 151. Paris, 1842. Also Muller's Physiology, Volume i.

Though these data of experimental physiology are established by a great number of experiments instituted upon living animals, they would with difficulty have been admitted by the majority of practical physicians, if they had not received the sanction of clinical observation. Now, we daily meet with instances of neuralgia, occupying certainly one or several branches of the Tergeminal Nerve,—never the Facial Nerve,—and palsies of the face, very certainly referable also to an affection either mechanical or dynamic of this last nerve. All the doubts which might yet remain in this respect, appear to me to have been recently removed by MM. P. H. Berard, Valentin, Magendie, Longet, and Constantine James.

As to the nature of the local nervous maladies now mentioned, that is less evident. Without pretending to resolve the difficulties of this interesting portion of the pathology of the nervous system, I may say that it has at all times occupied my peculiar attention, and that I have many times proposed to myself the question, if the idiopathic palsy, with which the facial nerve is so often attacked, might not be to it what neuralgia is to the tergeminal nerve, the difference of functions being capable of bringing one of them in the phenomenal expression of a lesion perhaps identical. To give an answer to this question is certainly not easy, as all the elements capable of resolving it were wanting. It appeared to me, nevertheless, after reflecting on the subject, that any cause capable of exciting acute pains in a sensitive nerve, ought to produce convulsions rather than palsy in a motific nerve, that is, in the muscles to which it is distributed. Theoretical induction rendered my conviction on this point complete; but I required practical facts which might confirm the one inference, in order to make the other accord with it. Unfortunately, the instances of convulsions confined to the muscles only subjected to the action of the facial nerve are so rare, that I have not been able to meet with one example described in the numerous works which I have consulted. I remained, however, not less convinced, that what is possible for the Tergeminal Nerve as an organ of sensation, the exaggeration of its function on Neuralgia, could not fail to be so for the facial nerve, as an excito-motor organ, or convulsions. The fact for which I had in vain long sought in the Annals of Science, and in the recollections of a long practice, accident presented to me about twelve months ago. The following is the fact which then presented itself to my observation, and which is still in the condition described.

CASE FIRST.

Jeannette Lycops, aged seventeen years and a-half, small, of good constitution, of a temperament partaking rather of the nervous than of the sanguine, menstruating at the age of fourteen, without disturbance in the system, and always in a regular manner, having never encountered either great crosses, nor fears, nor vexations, nor diseases, continued to enjoy the best health till about four years ago. At this time it was observed that the cheek of the right side was agitated by slight contractions, which were at first believed to be one of those vicious habits so frequent among children. Very soon came on real convulsions, always confined to the right side of the face, but so violent, that the parents of the patient resolved to consult at first one physician, then another, then a third, all without avail, as all the methods of treatment, both internal and external, which had been successively put in practice, produced no appreciable effect.

From that time all treatment was given up; and it was only eighteen months later, in the first days of February of the present year (1848), when the patient came to request my advice. The state in which I found her, and in which she still continues, and which constitutes her whole disease, consists in contractions of all the muscles of the right side of the face, contractions which are sometimes rapid and transitory, sometimes continued for ten or twelve seconds. Strong or feeble, they are entirely free from pain, and always occupy simultaneously the superficial muscles of the face, in such manner that the observer perceives and feels quite well, by the application of the hand, convulsive motions taking place at the same time in the top of the forehead, the eyebrows, the *orbicularis palpebrarum*, the middle part of the cheek, the root and ala of the nose, the commissure of the lips, the prominence of the chin, the cutaneous muscles of the neck, &c., which gives to the one half of the countenance the expression of laughing, with traction more or less considerable of the nose and of the mouth towards the diseased side.

These convulsive movements, Jeannette Lycops can neither prevent nor completely check; nevertheless, they are or appear to be less energetic when she opens or closes the mouth with a certain degree of force; for mastication is performed perfectly well, and the alimentary mass is conveyed with equal facility to the right and to the left. Speech and prehension of alimentary articles are constrained, but by no means prevented, during the contractions. In the intervals of these attacks, which are most frequently very short, yet which are sometimes prolonged for the space of from twelve to fifteen minutes, the countenance is moved freely on the one side as on the other. The sensibility of the cheek is neither increased nor diminished; no pain is felt in any point of the head, nor towards the ear, nor towards the teeth; and when these parts are examined with care, the observer finds nothing deviating from the normal state, nor anything unnatural in the movements of the tongue. Taste, sight, smell, and hearing are in like manner entirely unaffected, so that, if the spasmodic movements were suspended, no trace of this singular affection would be left, while all the functions of the economy are accomplished in the best possible manner. I must not omit to say, that during sleep, which is very good, the contractions of the cheek lose neither their activity nor their frequency.

As to the causes of this disease, I was unable even to form on them a suspicion, and neither the patient nor her parents could specify the slightest circumstance capable of enlightening my mind in my researches on the subject. It appeared to me further, that this cause, whatever might be its nature, had acted upon the facial nerve, not in its intra-cranial course or in that through the Fallopian canal, but after it had emerged from the latter, at the point where it becomes superficial; led as I was to this supposition,—and the reader will have the goodness to attend to this,—by the absolute immobility during the convulsive movements of the face, of the stylo-hyoid muscle and the posterior belly of the digastric muscle, both of which are supplied by a branch of the facial nerve which separates from it at the point of emergence. Of this immobility it was easy for the observer to be satisfied by tact and by sight, in the absence of all ascending movements and traction of the hyoid bone, and of the larynx at the time of the convulsions; and of its correctness the professors Hairion and Schwann were perfectly convinced. Manifestly, if the facial nerve were affected towards its origin, none of the muscles subject to its influence would escape the lesion, by which the greatest number of them was attacked.

I may cite another proof of the integrity of the facial nerve within the canal of the petrous portion of the temporal bone, and at its immediate exit from the stylo-mastoid hole, in the total absence of convulsive movements of several of the muscles of the palatine velum, of the occipital muscles, of the posterior and superior auricular muscles, to which the direct or anastomotic filaments of the same nerve are distributed. Lastly, it is probable that we should also observe some disorder of hearing, if the nerve were affected in its course through the Fallopian aqueduct; and, on the other hand, this sense is unaffected in the patient. This point, and this series of proofs I consider of importance. It forms one of the fundamental principles of the memoir now laid before the academy.

Here, then, is an example of a convulsive affection, which extends to all the muscles of the face, which are employed in the expression of the physiognomy, and of which the nerve of the seventh pair is the moving agent. When I first witnessed the phenomena now detailed, I had difficulty in guarding against the idea that it consisted simply in what is named *Tic*, or that it was referable to some mechanical irritation, to some organic lesion of the nerve. Nevertheless, when I learned the manner in which the disease had manifested itself; when I had examined the teeth, the cheek, the auditory canal; when I considered that the young person Lycops had never suffered a fall nor received any blow upon the affected side, that her health was perfect, and that for nearly four years the phenomena observed had undergone no change either in character or nature, and that they had neither been increased nor diminished by any circumstance, either physical or moral;—I inferred that the disease must be considered as idiopathic, as is, for instance, palsy of one side of the face, though the observer may be tempted at first sight to consider this last as dependent on compression or on some alteration on the facial nerve at its origin or in its course. It is the fact that there is between these two affections a complete identity as to seat; the main difference is, that their phenomena are inverted, that is to say, that the muscles which are in the one paralysed, are in the other convulsed, in such manner that it is in this last case the diseased side which draws to it the sound side, out of the condition of resisting its contractions; and hence the deviation of the mouth and of the nose of this side, while, in the instance of palsy of the facial nerve, the sound cheek draws to itself, when it is moved, the palsied side, which can no longer oppose resistance to antagonize it, as when it possesses all its natural strength. If it be wished to obtain a conclusive proof of the identity of seat of these two disorders, let the inquirer read the faithful and minute description of the idiopathic palsy of the facial, which is given by M. H. P. Berard,* substituting, however, the convulsive agitation of the muscles for their immobility, and he will have an exact representation of what takes place in the patient whose case has been given. Nothing is more curious than this comparison.

Nevertheless, this great difference exists between these two nervous disorders, that the one is continuous and the other is intermittent. Now, in order to be assured that this difference is important, it would be requisite to know the nature and especially the mode of action of the causes in the two cases. In point of fact, authors ascribe in general facial hemiplegia to an attack of rheumatism, to the direct impression of cold, to certain strong mental emotions. It may be asked, how do these causes operate? what change do they produce in the nerve, in order that its functions may be suspended? To this subject we can only give explanations more or less plausible; and some of these, perhaps, I may afterwards attempt. Meanwhile, it is necessary to say that the intermittence in the convulsive affection now under consideration establishes several very remarkable relations between it and another kind of nervous maladies not less interesting, namely, the neuralgias. Indeed, in both there is intermittent pathological exaggeration of the function, the symptomatic expression of which differs only because the functions of the two orders of nerves themselves differ. Thus, the facial nerve, which is motiferous, expresses its sufferings by means of muscular contractions; while in the nerve which is sensiferous, namely the tergeminal, the suffering is manifested by pain. It may therefore be said that there is Neurosis, or rather Neuropathy, in both instances; and it may be presumed that both depend on identical causes. Another analogy which exists between these two disorders, is that, in both, the lesion of the nerve appears to commence only at the point of its emergence, that is to say, at the place at which, issuing from a canal, or from a notch, the nerve becomes and continues superficial. No person is ignorant that this disposition is in truth one of the most distinctive characters of free, true, dynamic neuralgias, that is to say, neuralgic attacks exempt from all perceptible alterations in structure.

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* Dictionnaire de Medecine, Deuxieme Edition, Articles *Face et Paralysie.*

I may be required to explain, after what has been now said of the seat of neuralgic disorders and of the convulsive malady now under consideration, how it happens, that in the instance of the young female Lycops, the stylo-hyoid muscle and the posterior belly of the digastric muscle do not contract at the same time as those of the face, since the nervous branch, which supplies these muscles, proceeds from the nerve of the seventh pair, at its issue from the stylo-mastoid hole. To this I reply that the reason is because this branch, in the same manner as that which proceeds to the palatine velum, and another twig which according to certain anatomists is distributed to the tongue, instead of becoming superficial like the trunk of the nerve, sink deeply under the jaw in order to arrive at their respective destinations, and that this deep-seated direction may probably protect them from the operation of causes of disorder. As to the absence of convulsions in the auricular and occipital muscles in the patient, muscles to which also proceeds a branch of the facial nerve at its emergence from the Fallopian aqueduct, I remark in this respect, that in general these muscles are so little developed in man, that it is difficult to observe their movements satisfactorily, and impossible in the most part of females, those of the middling ranks especially, in consequence of the habit which they have of compressing the head in order to fix the head-dress. To this cause M. Berard hesitates not to refer the non-existence of palsy of the same muscles in facial hemiplegia.* Moreover, I observe, with regard to the seat of neuralgic distempers, that if it is more ordinary to see the pain commence exactly at the point of emergence of the nerve, it happens also that, in violent neuralgic disorders, and in the paroxysmal accessions of the supra-orbital nerve, for instance, the suffering of the diseased branch extends to the lacrymal and nasal branches, as evinced by the redness of the conjunctiva, the flowing of tears, and the *Coryza* and pose of the pained side. The same thing also sometimes takes place in facial hemiplegia, in which we see the palsy affect part of the tongue and the palatine velum, and in which the disorders are manifested as far as the intrinsic muscles of the ear.* It would not be astonishing that there exist also examples of idiopathic convulsions of the face, extending by continuity to the stylo-hyoid and the digastric muscles. There is indeed no reason why one cause which acts in a small degree, may not act in a greater degree, with more energy, and for a longer time. Lastly, it may be possible, that the contrary should take place, that the disease may occupy only one branch of the facial nerve; in this case a part only of the muscles of the face would be attacked by convulsions.

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* Dictionnaire de Medecine, Deuxieme Edition. Articles *Face et Paralysie.*

Reverting to the very close ties which connect the two forms of Neuropathy, there is a temptation to discover another relation between them, in this circumstance, that the very intense neuralgia of the infra-orbital branch of the fifth pair is accompanied with contractions more or less forcible of the majority of the muscles of the face on the affected side,—a circumstance which has procured it the name of TIC DOULOUREUX. But in this there is no analogy; these contractions being a simple effect of instinctive reaction of the sentient principle against pain, or rather a reflected movement, according to the expression of Dr Marshall Hall, because, according to this pathologist, the tergeminal nerve performs the part of excito-motor to the facial nerve.

Here I may be allowed to enter into some historical details, the interest of which must serve as my excuse, and which shall possess further the double advantage of giving some relaxation to our attention, and of shedding a clear light on the subject of inquiry.

The complex phenomenon of convulsive Tic Douloureux, that is, of a morbid condition, which is seated in two different species of nerves, though easily understood by us who know by what we are to be guided upon the functions of the nerves of the fifth and the seventh pairs, was incapable of explanation by pathologists before the time of Charles Bell; and from this ignorance has proceeded the confusion which has, in some degree, reigned in our days, upon the painful, convulsive, and paralytic affections of the face. We should, nevertheless, labour under a great delusion, if we should imagine that the ancients were destitute of all correct ideas with regard to these affections. Deprived partly of our knowledge in anatomy and physiology, but endowed with a great spirit of observation, and with that patience which refrains from anticipation of the time, they kept an account so exact of all the circumstances of diseases, that they repeatedly came to discover their seat and nature by this method alone. Their misfortune is that they most frequently had for supporting their doctrines only transitory observations or proofs derived from reasoning; in a word, that they wanted those fixed material proofs, capable of being reproduced at will, such as are furnished in the present time by healthy and pathological anatomy, as well as by experimental physiology, and which are above all so necessary to the elucidation of the native local disorders. Now the want of demonstrations of this nature, or it may be, the taking into consideration of the apparent sensible morbid phenomena only, which frequently depend on varied causes, has introduced into the descriptions of diseases, bequeathed to us by most ancient authors, an unpleasant obscurity on their idiopathic, symptomatic, and sympathetic nature. Such has it been to neuropathic disorders. Their history presents a striking example of the uncertainties and the vacillations which are communicated to science by the observation of facts, all the elements of which are not known.

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* See among other cases the case of double facial hemiplegia, recorded by M. Constantine James in the Gazette Medicale of Paris, No. 38, 1841. Encyclographie des Sciences Medicales, Deuxieme Cahier, 1841.

Though here the principal question relates to the history of facial convulsion, that of palsy will be found almost always associated with it, as these two affections are most frequently described at the same time, or are compared with each other by authors.

If we look to the first ages of medicine, we find even there proofs of the existence of these two diseases; for it is probable that the morbid condition designated by the ancient Greek physicians, under the name of *Spasmus Cynicus,* was only convulsion of the face, either primary or symptomatic. Aretæus, the Cappadocian, speaks in unequivocal terms of convulsion and palsy of the face;* and some passages of Galen show that he distinguished the active spasm of the cheek from the simple muscular contraction of the same side in palsy. In Cœlius Aurelianus is mentioned an affection‡ which M. Pujol thinks is the true convulsive spasm of the face.§ This, however, appears to me doubtful. It is, farther, easy to see, from the description given by Cœlius Aurelianus, that this author had some idea of convulsion and hemiplegia of the face. Paul of Ægina, Aetius, and others, also bestow on them some words. Celsus had witnessed only the *Spasmus Cynicus*, or grinning spasm, which ensues accidentally in the course of acute fevers.*

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* De Causis et Natura Morborum Diuturnorum. Lib. i., cap 7.

‡ De Morbis Chronicis. Lib. ii., cap. 2.

§ In his Essay on Tic Douloureux, which we shall have frequent occasion to cite, M. Pujol says that Cœlius Aurelianus is the only one among the ancients who, under the title of *Raptus Caninus*, has spoken distinctly of a species of involuntary laughter, which is manifested by unexpected accessions of short duration and frequently repeated. If the French writer had read with attention the passage which he adduces from the Latin author, he would certainly not have recognised in it idiopathic convulsive laughter. It appears that in this passage Cœlius Aurelianus rather refers to certain varieties of St. Vitus's dance, or to some convulsive contractions of the sterno-cleido-mastoid muscle, since these convulsions

The traditional ideas of these diseases, though their history has been merely sketched, has, nevertheless, been preserved among physicians for centuries,—maintained and revived, doubtless, from time to time, by the observation of new facts. But it is worthy of remark, that while they are scarcely mentioned, as has been seen, by the Greek and Roman writers, they are carefully described several centuries afterwards by the Arabian physicians, and especially by Avicenna,† and by Rhazes. According to these physicians,‡ the disease which these translators designate under the names of *Distortio* and *Tortura Oris* is indeed the idiopathic convulsion and palsy of the face, namely, Tic Douloureux, as M. Pujol wishes to believe from some words of Avicenna.

The two Arabian writers appear truly to form a second period in the history of the Neurotic disorders, the existence of which is at that period stopped. After their time, and for five or six ages more, pathologists continued to be occupied in their works with these diseases, but at much less length, and with less precision. Then arise at the same period two authors, Peter Forest in Holland,§ and Hieronymo Mercuriali in Italy,‖ who were particularly devoted to the study of these same affections. Trained in the study of the ancient authors, and of the Arabians, not less than instructed by practice, they trace more exactly than their predecessors had done, the delineation of the convulsion and palsy of the face, which they also name *Tortura Oris*. The differen-

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extend to the shoulder. "Humeros rapiat, et ita patientes faciat commoveri, tanquam onus humeris bajulantes transferendi ponderis causa." And the proof that this is the fact, is that, afterwards, Cœlius Aurelianus adds,—"Differt autem a spasmo et paralysi musculorum, qui buccas colligant;" last affections which can be nothing but convulsion and hemiplegia of the face.

* De Medicina. Lib. iv. cap. 2.

† Liber Canon. Fen ii. cap. 15. et seq.

‡ Rhazes De Re Medica, Lib. ix. cap. 10. El Divis, Lib. i. Cap. 4. De Tortura Oris. The following extract from the barbarous Latin of the translator indicates the manner in which Rhazas establishes the diagnosis between convulsion and palsy.—"Fit ex duabis rebus ; ex spasmo quidem in unâ duarum partium trahente latus alterum ad se, et signa sunt strictura cutis frontis in uno latere, et tensio ejus in latere altero. . . . . Et fit (tortura oris) ex mollificatione ; et signa sunt mollificatio partis, et debilitas motus ejus, et paucitas tensionis cutis, et attractio palpebræ ad inferiora. Et cura ejus est sicut cura paralysis, cum gargarismo et masticatione thuris, et administratione nucis moschatæ, et retentione ejus in ore suo, in hac aegritudine est magis conveniens."

§ Petri Foresti Opera Omnia Francofurti 1619. De Morbis Cerebri, Lib. x. Obs. 124 et 125.

‖ Hieronymi Mercurialis Medicina Practica. Lugduni Batavorum.

tial diagnosis which they draw is strikingly true, and may be justly recommended as serviceable. These physicians are quite agreed with their predecessors upon the difficulty of curing the *Tortura Oris.* Mercurialis considers it as incurable after six months' duration; but he states, upon the authority of the Arabians, that it is without danger, because these observers declare that they have seen it prolonged for forty years. Avicenna recommended his patients to view themselves frequently in a mirror, with the intention of attempting to restore to their features their natural arrangement; and while Peter Forest declares that he had reason to be pleased with this remedy, Mercurialis affirms that nothing is more pernicious, because the vexation which is felt by patients at beholding the deformity by which they are afflicted, tends to aggravate the disease. When all other remedies, as errhines, sialogogues, scarification and cupping, sinapisms, and similar measures have proved unavailing, the Italian physician is not afraid to have recourse to the employment of the actual cautery. (*Et tandem ad ipsum ignem.*)

Taking leave of these two good observers,—if treatises on medicine, general and special, still make mention of convulsions and palsies of the face, it is in a manner much less explicit, and altogether secondary. Many authors, who have studied with particular attention the pathology of the nervous system,—and among these may be mentioned Thomas Willis and Frederick Hoffman,—pass over in silence convulsions and palsies of the face. Though neglected, however, they were far from being entirely forgotten, as is shown by the example of De Haen. This physician speaks of these affections as being very difficult to cure; and he appears to me to be the first person who placed the seat of these disorders in the *portio dura* of the seventh pair, and who treated them by means of electricity. His observations are the following.

"This also I may be allowed to add. Chronic palsy and convulsion of the cheeks it is more rare for us to cure than to leave in a hopeless state; especially if this local disease of the face is the only one which can be blamed in the entire human body. The cure of this complaint I have sometimes effected; but more frequently I have failed. And at present there is under my care a woman, who, after suffering for the space of two years under a discharge of purulent matter from the right ear, at length, in the end of the year 1758, became affected with unsightly palsy of the right eye and right cheek, while, nevertheless, the purulent discharge from the right ear continued. In the eighth month after the commencement of this disease, the patient was subjected to the action of the electrical machine, with much advantage to the eye, but almost nothing to the cheek; although the electrical energy was applied both to the origin of the infra-orbital branch of the fifth pair, the second branch of the fifth pair, and the point where the *portio dura* of the seventh pair emerges from the aqueduct of Fallopius, in order to form the expansion called the *Pes Anserinus.* But as in this local-form of palsy, so also is the matter in local convulsion of this region. This disorder, therefore, is wont to baffle the resources of our art." *

The manner in which De Haen expresses himself in this passage seems to show, that in his time the idiopathic convulsions and palsies of the face were generally known, and placed in the seat which he assigns them; for he speaks not of them in the tone of a man who thinks that he is announcing anything new.

It might be expected that the ascertainment of a fact of this kind ought to have opened up a new era as to these diseases; the contrary, nevertheless, rather has been the case; for after the time of De Haen, no more inquiry upon them took place. This forgetfulness ought to be so much the more the source of surprise, in as far as, at the period when De Haen published his work, the experiments on animals were highly estimated, and as some attempts which were undertaken upon the nerves of the face, might have placed physiologists in the path of truth. Whether it were indifference, or rather that the unknown elements which the problem of the facial neurotic diseases involved, deterred experimental physicians, it is certain that this class of disorders underwent not less one of those stationary periods, or rather retrograde movements, to which they had several times previously been subjected. They were not, indeed, altogether lost sight of, as is shown by the testimony of the many writings, the appearance of which the second half of the eighteenth century witnessed,—writings in which the memory of convulsions of the face is recalled, though in a concise and very vague manner.

In this condition was the history of these disorders, when M. Pujol of Castres addressed to the Academy of Medicine at Paris an Essay on Tic Douloureux, on which M. Thouret was requested to give a report. With this secondary duty M. Thouret did not satisfy himself. He read to the Academy in 1785 a memoir of great interest, in which are given a Summary of his First Report, his own observations, and the essay of M. Pujol, who then published his performance in 1787. In this last memoir, it is shown in the second chapter, which is entirely devoted to historical researches, that the ancients had mistaken Tic Douloureux, but not palsy and convulsion of the face, which M. Pujol improperly denominates, as has been shown, *Raptus Caninus*, following an erroneous interpretation of the text of Cœlius Aurelianus. Subsequently, in the eighth chapter the French physician makes be seen with sagacity the analogy between Tic Douloureux and these two last morbid states; but as he, like his contemporaries, that particular nerves are affected in sensation and in motion, and that in the face these nerves are those of the fifth and the seventh pairs, he has been unable to refer to them the diseases which are peculiar to them, though he considers these diseases as idiopathic, and connects them with identical causes. It is curious to observe the confusion in which M. Pujol and M. Thouret are placed by their ignorance of the functions of the Facial and of the Tergeminal Nerve, when they are considering the operations to which these nerves were subjected, in order to obtain the cure of Convulsion or of Tic Douloureux, which, according to the one author, yield to, and according to the other author, resist, the cauterization and the division of the nerve by the knife. This difference in results these authors are unable to explain. If M Pujol admits the efficacy of the caustic, it is not because it destroys part of the nerve, but because it eliminates the morbific humour on which the disease depends. The following passages from M. Thouret will prove, in other respects, how great was the confusion of ideas among physicians of that period, both upon the seat of the disease, Tic Douloureux, and upon the effects of cauterization of the nerves of the face, in the treatment of this last disorder, and convulsion, properly so called.

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* Ratio Medendi, Part iv. Cap. 8.

"Have we," M. Thouret asks, "any anatomical observations on the seat of this disorder (*Tic*), and upon the state of the parts affected by it? If we reflect that it appears exclusively to attack the superior and inferior maxillary nerves and the *portio dura* of the seventh pair, &c. This instance, he afterwards observes, of the destruction of the maxillary nerves, would prove at least, that it cannot be so subject as some authors represent, to give rise to unpleasant accidents, such as palsy of the muscles of the face, and the formation of a convulsive Tic. This reflection is further confirmed by other facts. Practitioners have often had recourse to the division of the nerve in the species of Tic to which the name of Convulsive has been given; and the perfect success with which this operation has been followed permits not to doubt that the nerve was really divided." It is certain that in this order of cases the practitioner had to treat, without being aware of the fact, attacks of convulsive Tic Douloureux or Neuralgic Disorders.

It has been already remarked, that, notwithstanding the publication of the works of Charles Bell, it is only within a few years that we know, through the medium of M. Berard, that the facial nerve is never the seat of neuralgic disease, no more than the Tergeminal or Fifth Pair is the seat of palsy, and, consequently, of convulsions. We say nothing of the views of M. Pujol upon the proximate cause of the erethism of the nerves in these last disorders, and in Tic, except that he represents it to consist in the accumulation of electrical animal fluid in the nerves, which thereby become rigid and tense.

Such nearly was the state of knowledge upon the neuropathies of the face, and especially on the species of convulsion which forms the principal object of this memoir. If the other neurotic diseases continued to be studied with care, no inquiry was made regarding this, until the time (1814) when M. Roy, the author of a very serious and very profound work upon Laughter,* attempted to classify the different species of morbid states designated under this name. Convinced that the numerous denominations employed by authors to express these morbid states, namely, laughter, grinning, spasm, trismus, maxillary tic, Sardonic laughter, Cynic spasm, cynogeles, canine spasm, spasmodic, convulsive, painful spasm, *Tortura oris*, *Raptus Caninus*, &c., tend only to embroil and confuse the knowledge of these disorders, aud that these terms are further deficient in exactness and precision, he associates all of them under the collective title of *Trismus Sardonicus*, making simple varieties of those symptoms, which the ancients had considered as particular affections. M. Roy, however, has here fallen into the mistake of which he accuses his predecessors, in this respect, that he has not properly distinguished the idiopathic from the other instances of the disorder, and that he does not determine their seat in an exact manner. I may be allowed then to say, that this physician has neither perfectly known nor justly appreciated the labours of his predecessors.

Here I feel the necessity of communicating a remark, which it has occurred to me to make in examining the records of science. This is, that it appears to me that the convulsive affection now under consideration was better known before the discoveries of modern physicians in the anatomy and physiology of the nervous system. Invariably it is the case, that the only works in which we find information a little satisfactory on the present subject are all anterior to the date of these discoveries; and that, excepting M. Roy, who has in vain attempted to throw some light upon laughter, viewed as a morbid condition or phenomenon, no other writer appears to have considered the subject. Joseph Frank, indeed,† when treating of the diseases of the nerves in particular, says that certain convulsions depend on the nerves themselves, but he does not dwell more on those of the face than on others; he quotes no observation; and he concludes by declaring, that the part of pathology which relates to the individual nerves is so meagre, that it would scarcely fill two pages. Among the many works which have been published on the Neurotic Diseases, beginning with

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* Traité Medico-Philosophique sur le Rire. Paris, 1814.

† Traité de Pathologie interne des Maladies du Systeme Nerveux, Chap. 37. Edit. Belge, 1837

Joseph Frank, who gives a summary of most of those of his predecessors, and of his contemporaries, to the moment when the writings of Charles Bell were made known on the Continent, I know no one who mentions the convulsive disease described in this memoir. The memorable discovery of the English physiologist, by fixing the attention of physicians upon the respective functions of the sensiferous and motiferous nerves, ought at the same time to have directed attention to these diseases. This result seems, nevertheless, not to have followed; and even the observations of the ancients on Spasmodic Trismus were overlooked. At this critical point, M. Descot, who published, in 1825, under the patrônage of Beclard, a volume of three hundred and thirty-four pages on the Local Diseases of the Nerves, says not a single word on Idiopathic Convulsions of the Face.

The same nearly may be said of the numerous works published upon the Anatomy, Physiology, and Pathology of the Nervous System; of treatises on Semiology and Diagnosis; of articles in Dictionaries, and similar publications. I must, nevertheless, acknowledge that M. Andral and M. Jobert have admitted, the first in his course of Medical Pathology, and the second in his studies on the Nervous System, the possibility of the existence of the Convulsive Neuropathy, without, however, dwelling particularly upon the disorder. This affection ought then to be considered as in some sort new, if we followed only the labours of modern physicians. It has been shown that it was known to the ancients, and that by a few of them it was accurately described, and that its seat was indicated a century ago by De Haen; but, on the other hand, we also know that physicians were generally ignorant of its nature, its causes, its exact limits, its analogies with other nervous disorders of the face, its existence as a special morbid individuality,—circumstances which already are, or speedily will be, elucidated with a new degree of light. In no ancient or modern work have I met with anything else than the simple description of the facial convulsion. The instance which I have recorded is, therefore, the only one which I can present as truly complete. Before deducing from it the conclusions which it warrants, I shall give a short analysis of it, in order to establish as clearly as possible the diagnosis of the disorder.

I stated, that when the young person Lycops came first to consult me, I was tempted to take her disease for one of those tics, or one of those vicious habits so frequent among young persons; for it presents with them some resemblance. This idea, however, I abandoned, when I considered that tics of this kind are ordinarily the effect either of a degree of nervous mobility, which is corrected with sufficient facility by the employment of distraction of the attention, by corporeal exercise, a good regimen, bitters, antispasmodics, and similar remedies ;—or that they are the effect of repetition, at first voluntary, then to a certain extent involuntary, of contractions generally limited to some muscles of the face or of the neck, which continued attention is capable of repressing, and which contractions further come and go, usually augmenting, and even being suspended without apparent cause ;—or, in short, that these tics may be the effect of a remote cause, such as the presence of worms in the intestines. Besides, these partial, irregular, transitory spasmodic movements always cease when their cause ceases to exist or to act. Nevertheless, in order to obviate the chance of being deceived, and in order to satisfy myself that the condition of this young woman was not the effect of habit, of imagination, of imposition, or of acting, I caused, without her being aware of it, a pair of iron pincers to be heated to a white heat, and approached it suddenly to her face, while another person held her head. The terror of the patient was extreme ; but the convulsive contractions of the face were neither increased nor diminished by the proceeding.

This experiment, in which I was assisted by M. Professor Schwann, confirmed me in the opinion which I entertained, that this disease was neither a bad habit nor any mere Tic, which never withstand the trial now mentioned, and which further present neither the rapid development, nor the uniformity, nor the extent, nor the continuance, nor the intensity of the muscular contractions observed in the case of this young female. Further, the movements which constitute tics, instead of occupying at once all the muscles subjected to the action of the same nerve, are confined to a part of the face, of one or both sides indifferently, to the *orbicularis palpebrarum*, to the *alæ nasi*, to the lips, to the eminence of the chin, to the muscles of the neck, to the temporal muscles, the masseter muscles, the pterygoid and similar muscles. On the other hand, it has been already seen, that the most attentive examination of the cheek, of the mouth, and of the ear of the affected side, furnished the knowledge of nothing deviating from the normal condition, and that all the functions were performed in the most regular manner. I believe, therefore, that I am entitled to establish the inference, that the pathological phenomenon which has come under my observation is very truly an idiopathic morbid state quite peculiar.

It may have been observed, that hitherto an interesting part of the history of this case, namely, that relating to treatment, has been passed over in silence. The reason is, that upon this subject I have little to say. I had at first hoped, that the means which are applied with advantage to the treatment of local nervous disorders would have been in this also of some service ; but in this expectation I was disappointed. Neither those agents which most powerfully modify the nervous system, such as morphia, veratria, strychnia, the extracts of tobacco, of stramonium, of belladonna, and similar articles, administered immediately by the endermic method, in unction, in friction, in fomentation; nor tonics, bitters, chalybeates, nor the vermifuge and other purgatives, nor antispasmodics given internally under all forms; nor the application of cold and of vesicatories upon the cheek; nor galvanopuncture, have shown any influence in modifying the muscular contractions. I persevere in treating the case, nevertheless, with much curiosity in observing all its phases. The unquestionable success which M. Magendie and M. C. James have recently obtained in the treatment of facial neuralgic disorders and facial hemiplegia, lead me to think, that electro-magnetism, administered by means of the machine of Clarke, might be of great service in idiopathic convulsions; and it is my intention to have recourse to it at the earliest opportunity.*

Since it is proved that physicians, at all periods of the history of medicine, have had occasion to observe facts similar to the one recorded above, it was natural to think that such facts ought still, from time to time, to take place in medical practice, although they might not sufficiently attract the attention of physicians, who generally regard them as insignificant spasmodic affections. The event very soon justified my anticipations. In a journey which Professor Hairion made in the month of August 1847, to Beaumont, that physician, who had several times seen along with me, with great interest, the young female Jeannette Lycops, met with an example of hemifacial convulsion, in a woman who consulted him for a complaint entirely different from this affection, to which she paid little regard.

The following is the account of this case given me by M. Hairion.

CASE SECOND.

Florence Pierquet, aged fifty years, lace worker, of bilious temperament, and constitution very much shattered, was attacked in 1815 with itch, of which she got cured only at the end of two years. For the space of fifteen years she has suffered from wandering muscular rheumatic pains. She has always menstruated regularly until the age of fifty-one years, at which period this secretion ceased, without her health undergoing any remarkable derangement. In 1829, in consequence of prolonged night-watching, she was attacked with spasmodic contractions over the whole right side of the face, not very perceptible at first, but which in the course of eight days attained the degree of intensity which they at present exhibit. The convulsive movements extend from the forehead to the neck, and spare none of the muscles which serve to the expression of the physiognomy. They are manifestly more marked under the influence of atmospheric vicissitudes, and during moist seasons. The appearance of very severe rheumatic pains in the trunk and in the extremities produces no modification of these convulsive movements; but during sleep they are suspended, and return upon awakening. They are, in other respects, very irregular in the period and manner of their return,—that is, they sometimes succeed each other very rapidly, and sometimes they are separated by intervals of some minutes.

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* The author adverts here, in a note, to the method recommended by Avicenna, of causing the patient to behold his features in a mirror, and thereby make efforts to overcome the muscular actions; and he adduces from Foreest the recommendation of Valescus, that the patient should attempt to blow the trumpet, and thereby overcome the muscular contractions by violent efforts. All this seems quite absurd and inappropriate in a disease dependent on lesion of the nerves, and not on mere bad habit. Under all circumstances, the case must be trifling and slight indeed, in which the mere efforts of the patient, as now recommended, could overcome the involuntary and irregular contractions.

These contractions disappeared at one time for one whole month without apparent cause, and they returned as formerly No treatment has been employed for their abatement or removal. When the interior of the mouth is examined, we completely perceive that the muscles of the palatine velum, and the deep muscles of the neck, are in no way convulsed.

This woman, Pierquet, is aware of a progressive diminution of sight; and it is for this infirmity that she consulted M. Hairion.

Though this observation presents few details, it nevertheless possesses in my eyes the greatest value, because it has been collected by a physician who, having seen the patient Lycops, was immediately struck with the complete identity of the two cases of disorder. In truth, we behold the same aspect of the countenance, the same clonic convulsions of those muscles only which are under the motific powers of the facial nerve, with only this difference, that the convulsions ceased during the time of sleep,—a circumstance which certainly does not change the fundamental character of the disease, of which there may exist all sorts of degrees, from the most feeble contractions to the strongest and the most lasting. In the woman Pierquet, the disorder evinced its presence subsequent to prolonged night-watchings, and in a person enfeebled and subject to wandering rheumatic pains. It is known that these are the conditions most favourable to the development of neuralgic disorders in general and facial hemiplegia in particular,—diseases with which idiopathic convulsions have a great analogy.

We possess, then, two well-established examples of convulsive affections confined to the muscles alone, regulated by the nervous influence of the *portio dura* of the seventh pair of nerves, after its emergence from the stylo-mastoid *foramen.* We have been enabled to judge that many others must have been met with in the medical practice of the last ages; and to those which I have quoted I might add two others, one of which took place in the person of a Nun, who had been affected with the infirmity for more than twenty years; and the other occurred in the person of a young man who himself reported to me the fact. In this last case the spasmodic contractions, which showed themselves two years ago, in the course of some days, and without apparent cause, took place during the night as well as the day. At the end of about one month, and after a great number of remedies had been employed without benefit, the convulsions became all at once so violent and so continuous, that the young man believed that his lips would be rent asunder; he felt at the same time violent shocks in the mouth, and in the throat a sense of extraordinary constriction, a species of strangulation, which filled him with great terror. Meanwhile these symptoms gradually became more calm, and with them disappeared the convulsive spasms of the face without again returning. I suspect that at the time of the concluding convulsive paroxysms of which I have spoken, the muscles of the palatine velum, the stylo-hyoid, and the posterior belly of the digastric,—in one word, all the muscles moved by the facial nerve,—had at one instant participated in the spasmodic tonic contractions which affected the muscles of the same side of the face.

Several instances of the same kind of irregular and spasmodic action will not fail to be recognised and noted by practitioners, providing those cases which I have now reported invite a little their attention. Meanwhile I think that I am entitled to establish from the foregoing facts the following conclusions.

1. That the facial nerve is susceptible of being attacked idiopathically with a lesion, which gives rise to involuntary contractions of the muscles of the face, as it is liable to be attacked by a lesion which causes palsy in these muscles.

2. That these two infirmities, probable effects of one and the same sort of lesion of the facial nerve, have a great relation with the Neuralgic Disorders.

3. That the analogy of functions leads us to believe that other motiferous nerves may be the seat of infirmities similar to that of the facial nerve.

4. That the facts recorded in this memoir fill up a gap in science, in this respect, that they tend to complete the series of vital or dynamic maladies with which the facial nerve may be attacked.

6. That these facts establish the existence of a class of nervous diseases, the seat and nature of which had not yet been determined, and which were generally included under the vague terms of spasms, of laughter, of tic, *Trismus Caninus*, *Trismus Cyni-*

cuś, Risus Sardonicus, maxillary trismus, and similar denominations.

6. That with idiopathic palsy of the face they furnish pathologically the proof of the functions of the facial nerve, already experimentally demonstrated by physiologists.

7. Lastly, that up to the present time this disease appears to have resisted the action of all the remedies which have been employed to control it.

(*To be concluded in next Number.*)

ART. IV.—*Account of an Instance of* MOLLUSCUM CHRONICUM. By DAVID CRAIGIE, M.D., Fellow of the Royal College of Physicians, Edinburgh.

[THE instance of cutaneous disease recorded in the following sketch came under observation, as may be perceived from the date, in the summer of 1818. It was probably the first instance in Great Britain, and certainly the first in Scotland, in which the disease was recognised and described as an example of chronic MOLLUSCUM. It had either escaped notice, or no attempt had been made to refer it to its proper place, until this was done by the author of the present notice.

After the author of this notice had shown the true nosological characters of the case of James Roy, every one that witnessed the case admitted that it was a genuine example of MOLLUSCUM. Mr John Alexander Schetky, staff-surgeon to the forces, whom the author had the pleasure to number among his friends, with that love for science for which he was distinguished, proposed to make a record of the case, by making an oil painting of the patient, to be finally presented to the museum of the hospital at Chatham. The author had already drawn up such an account as he thought would convey, with an engraved copy of the painting, a correct idea of the distinctive characters of the case; and this account it was his intention to present to the editors of the Edinburgh Medical and Surgical Journal. Mr Schetky, however, was of opinion that, the case being somewhat singular, might be offered to the Medico-Chirurgical Society of London; and he undertook to present it for this purpose to Dr Bateman, and to retain the painting in London until a drawing and engraving were made from it. Though some delay was occasioned by this proceeding, the author willingly acceded to it, and committed the manuscript to Mr Schetky. The paper was accordingly read by Dr Bateman, to the Medico-Chirurgical Society, on the 8th of June 1819.

For a considerable time no information was received as to the final disposal of the paper; and it was only in the summer of

1821 that the author was informed, in a note from Mr Schetky, that it was thought unnecessary or inexpedient to publish the case in the Transactions of the Society.

The author would at this time have presented the case to his friend, Dr Duncan, Junior, for insertion in the Edinburgh Medical and Surgical Journal. But the original oil-painting was now deposited in the museum at Chatham; and any attempt to procure a drawing and engraving would have been attended with difficulties and expenses so great that it was equivalent to impracticable. Under these circumstances the idea of publication was at that time abandoned, though the idea occurred more than once of endeavouring to procure another drawing of the man while he was resident at the village of St Ninian's.

It was only last summer that, through the kindness of a young friend quartered at Chatham, and engaged in the hospital and museum there, a copy of the original drawing was obtained; and the author now publishes the case, in the hope that, though deferred for thirty years, and possessing less interest than its publication might then have excited, it may still be serviceable as a record of a rare cutaneous disorder.]

Description of a Case of the Molluscum of Dr Willan. By DAVID CRAIGIE, M.D., House Surgeon to the Royal Infirmary, Edinburgh, Member of the Royal Medical Society, Edinburgh. (Communicated to the Medico-Chirurgical Society of London by Dr Bateman; read, June 8, 1819.)

"Quod in observatione indefinitum et vagum, id in informatione fallax et infidum est."—*Nov. Organ.*

The singularity of a disease, and the rarity of its occurrence, are two circumstances which, independent of its individual importance, powerfully recommend it to the attention of the physician. In a nosographical view, it is important to obtain a variety of cases of the same kind, equally to throw light upon the disease itself, and to illustrate, by comparison, others of the same order; since the similarity of external form and habit, the identity of texture affected, and other points of resemblance, can rarely take place without the possibility of reference to some general principle. The singularity and rarity of a disease may indeed depend, in a great measure, on the relative locality of the affection; for, though, in consequence of its endemial nature, a disease shall be familiar to the medical observers of one country, yet in another it can be known only by description; and to those who have no opportunity of visiting the countries in which it is prevalent, this can in general be the only source of information. That such is the case, with regard to two of the tubercular diseases of Dr Willan's classification, ELEPHANTIASIS and FRAMBOESIA, in common with many other morbid affections which owe their presence, so far as we know, to local peculiarities, must be obvious to all; but there are other affections of the same order, which, in consequence, not of their relative but absolute rarity of occurrence, become valuable and interesting objects of investigation.

In making these remarks, I trust I shall not be misunderstood. It is not my object to show that a disease is important in proportion to the rarity of its occurrence, and the singularity of its nature; or in consequence of its deviation from the usual morbid affections to which any organ is subject, or from the routine of cases which we are in the habit of observing daily.

"The love of the marvellous," says a distinguished author whose philosophical genius is admitted by all,—"the love of the marvellous is conspicuous in some medical writers. We find them full of extraordinary cases, such as have nothing similar to them, such as never happened before, and, consequently, such as will probably never happen again, described with a tiresome minuteness; while the symptoms that distinguish some common diseases from others of a different nature which resemble them, are far from being yet ascertained. I do not mean here to object to the recording every extraordinary event, as some of them may tend to throw light on the laws of nature in her ordinary course of proceeding. I only mean to censure this extravagant attachment to prodigies, when it leads us to neglect inquiries of more general utility."

Although the case of disease which forms the subject of the present communication is not precisely one which has never happened before, or may never occur again, yet it is so far extraordinary, that its rarity, combined with the certainty of its having occurred, forms a very sufficient reason for considering it with some attention. When, indeed, in any class or order of diseases, which have many common points of resemblance, one seems to occur so rarely that it is difficult to obtain a complete history of it, the propriety of recording every instance of it which comes under our observation, must be evident both in a nosographical and pathological view.

Of the genus Molluscum, the third in Dr Willan's order of TUBERCULA, a few cases not generally accessible are mentioned by authors; and only a single instance, which occurred many years ago in Germany has been particularly recorded; nor have I, in the course of reading or conversing with professional gentlemen, met with any other example. Dr Bateman, to whom cutaneous nosography is so deeply indebted, has indeed published, in his 10th fasciculus, a very beautiful and accurate engraving of a specimen of this disease, which occurred to Dr Willan; but it is not accompanied with any descriptive details. The object of this paper is to give an account of a case which is at present in the Royal

Infirmary of this place, that those who have no opportunity of personally examining the patient, may form concerning it as just a conclusion as it is possible to do from mere description.

In doing so, I am happy that I can refer to the accompanying engraving, which has been executed from a very accurate drawing of the patient in the most favourable attitude, by my friend Mr Schetky, Surgeon to the Forces, and Fellow of the Royal College of this place.

James Roy, aged forty, unmarried, by profession a weaver, born of parents reported healthy, a native of St Ninians in Stirlingshire; was admitted into this hospital on the 23d of July 1818, under the care of Mr Law, senior surgeon to the institution.

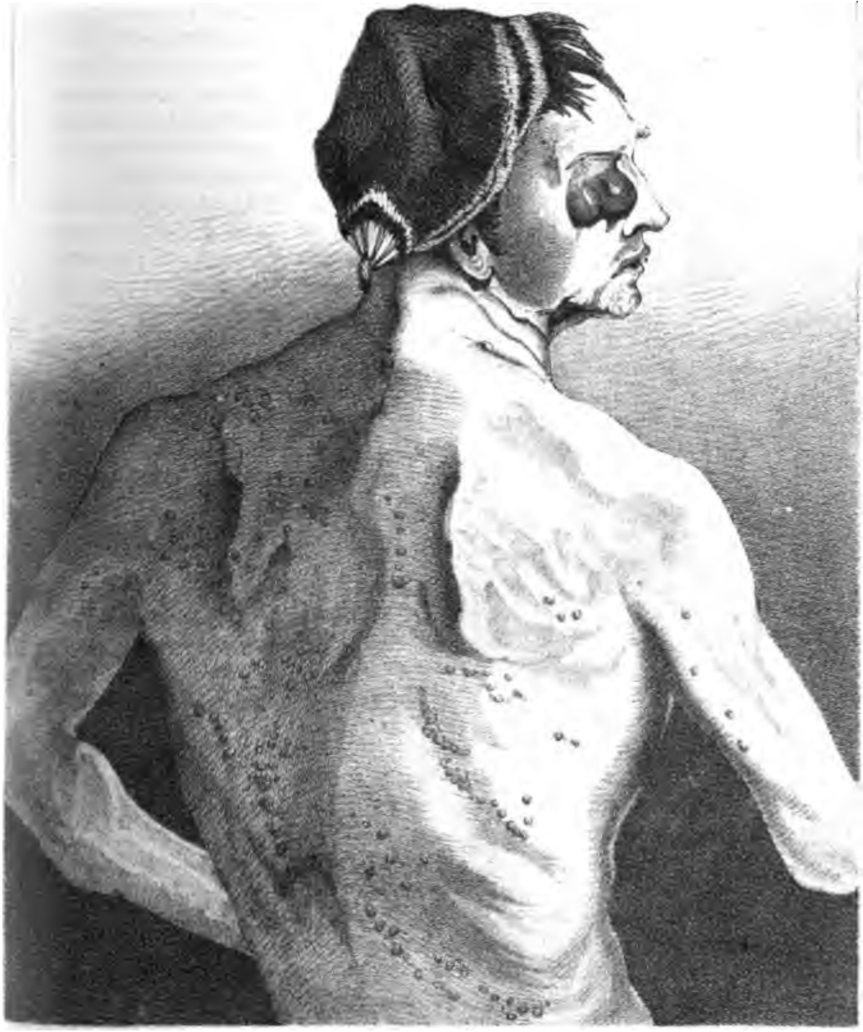
The cause of his applying for chirurgical advice, is the inconvenience occasioned by two soft pendulous bodies connected with the palpebræ of the right eye; but, in addition to these, the cutaneous surface of different parts of his body presents many elevated tumours, of which a more distinct idea may be formed by classing them under the following heads.

1. Situation; 2. Form; 3. Disposition; 4. Relation to surrounding parts; 5. Mechanical and Sensible Properties; 6. Organic Properties; 7. Development; 8. Structure and Composition.

1. *Situation.*—It is not easy to refer these bodies to any particular region of the cutaneous surface; they are found, however, chiefly upon the head, trunk, and superior extremities. There is one in the substance of each of the right palpebræ, and one near the centre of the forehead, remarkable for size, form, and disposition. The frontal temporal, and posterior auricular integuments in general present many minute elevations, mostly circular, about two lines in diameter, more obvious by ocular inspection than by examination with the finger. One near the inferior margin of the scalp on the left side, and two in the same situation on the right side. The anterior and posterior surfaces of the trunk, the nates, and superior portions of the thighs, present a considerable number of them of different sizes; on the superior extremities are a very few of a large size, and a greater number of minute ones; on the inferior extremities they scarcely descend below the knees, that which is most inferior being situated over the insertion of the *ligamentum patellæ.* In the intermediate spaces between the large tumours, especially on the trunk, there is a great number of smaller ones resembling those on the forehead. There is no appearance of them on the mucous surface of the mouth, fauces, or pharynx.

2. *Form.*—Of this quality there are at least four varieties.

a. The tumours of the palpebræ are oblately spheroidal, with



Dr. Craigies, case of

MOLLUSCUM CHRONICUM.

Edin. Med. and Surg. Journal.

VOL. LXXV. p.108.

the longest diameter in the direction of the length of the palpebræ.

b. The next variety of form is exemplified very distinctly in the one on the forehead, which is very prominent, has a regularly spherical summit, and a plane contracted base, the circumference of which is less than that of the superior portion ; this form occurs in the three on the scalp, one on the nucha, one over the base of the right scapula, and one lying over the right clavicle; those, in short, which are most prominent are of this shape, and are in general more or less pendulous; it is the tubercle marked (*v*), represented by Dr Bateman in the seventh compartment of the plate prefixed to the third edition of his Synopsis.

c. The third variety of form is exhibited by most of those situated upon the trunk,—which are either spherical or spheroidal segments, in the latter variety of which forms, the longest diameter, though scarcely referable to any general disposition, seems to correspond nearly with the longitudinal direction of the body; in these the base of course is formed by the truncated part of the segment.

d. The fourth variety is represented by a few pretty large ones situated upon the nates and superior parts of the thighs; these are flatly conical, with a regularly circular base. A pretty large one, situated on the ulnar surface of the left forearm, though more of a conical than any other shape, is not uniform upon its surface, has an irregularly circular base, and seems produced by two or more tumours originally separate afterwards coalescing.

3. *Disposition.*—The large tumours are, with few exceptions, distinct and insulated ; though the whole cutaneous surface of the trunk and superior extremities, intermediate to the large tumours, is occupied by a multitude of minute orbicular elevations, their disposition as to sessility or pendulosity is referable to the preceding article. The two first varieties (*a*, *b*) are in general pendulous; the two latter (*c*, *d*) are uniformly sessile.

4. *Relation to the surrounding parts.*—All these bodies without exception can be elevated along with the *cutis vera* from the subjacent cellular membrane; in no instance do they adhere to muscle, bone, or periosteum; and I think there can be no doubt that they are connected with the external surface or with the substance of the *cutis vera.* Those on the palpebræ are drawn towards the internal canthus of the orbit by the action of the *orbicularis palpebrarum ;* but as this muscle acts upon the palpebræ and whatever is attached to them, the motion of the tumours in this direction is no proof that the muscular fibres are implicated in the disease.

5. *Mechanical and Sensible Properties.*—The large and distinct tumours are in general more compressible and elastic than the

surrounding skin; the cuticula or cutis covering them is so flaccid, that it may be readily pinched up between the fingers, and with difficulty resumes its original disposition; the minute elevations, sometimes pointed, are somewhat harder, especially at their bases. Their colour is in general the same as that of the surrounding skin, though the most prominent are rather of a redder hue than the rest. The two on the palpebræ and that on the forehead are of a pink red colour, and present vascular ramifications traversing their surface; those on the anterior surface of the chest are of a reddish colour, in common with the integuments of that part.

6. *Organic Properties.*—It is a circumstance, perhaps of no ordinary importance, that an affection so extensively implicating the cutaneous texture gives almost no indication of the presence of those properties which characterise animal productions in general. They have little or no sensibility, are not the seat of any pain, and bear pressure without uneasiness; the only one of which, when pressed, he complains, is situated on the parts corresponding to the fourth rib of the left side, about one inch from its sternal extremity. When, however, an irritation of this kind is continued and severe, as from the pressure of the hat on the one on the forehead, and the great size and pendulous form of those on the palpebræ, considerable uneasiness is produced. They are not possessed of any properties which indicate relative sensibility or susceptibility of inflammation; and none of them, though they have continued a long series of years, manifest any tendency to suppurate.

7. *Development.*—The origin and progress of these bodies would lead us to infer that they are of a very chronic nature. The one on the superior palpebra has been in its present situation since the earliest distinct recollection of the patient; and though he is not certain, yet his impression seems to indicate that it is congenital. Upon the testimony of his mother, however, it is reported when first observed to have resembled a small hordeolum; at the age of fourteen or fifteen it had attained the size of a garden pea, and it has since increased gradually, till within the last two years, when its growth became more rapid than formerly. Before they began to appear on any other part, he had attained the age certainly of puberty, probably of manhood; he then began to notice the one on the inferior palpebra, and subsequently that on the forehead, but he is not certain as to their size or the course of their growth, which, however, has been, in common with that of the first, more rapid latterly. The largest upon the trunk and superior extremities seem to have appeared about the same time, and are reported to have increased in size along with the rest very slowly, but to all appearance regularly. The minute ones on the frontal temporal, and posterior auricular regions began about three years ago.

Magnitude.—In describing these tumours I have avoided mentioning their size, because I consider that to depend upon two circumstances already noticed,—the period of their origin, and the degree of their development; and because no fixed character can be derived from a quality so fluctuating as that of magnitude. Those of the palpebræ are as large as a pigeon's egg; the others seldom exceed the bulk of a recent garden pea, and are of all intermediate sizes to that of a small vetch.

8. *Structure and Composition.*—Although it would be requisite, in order to have a complete pathographical view of this disease, to ascertain the structure of a great number, if not of all the individual tumours, yet, as the extensive nature of the affection renders this impracticable, and as a notice of this kind, however limited, will throw at least some light upon the subject, I shall state very briefly the internal appearances of those which were removed from the palpebræ.

The great mass of both was composed of a whitish-grey matter, of the consistence of condensed cellular texture, penetrated through its whole extent by numerous minute blood-vessels, but exhibiting in no other respect appearances of organization. This substance, when macerated in water, floats away into gelatinous flocculent filaments, easily lacerable, and presenting no peculiar structure. Imbedded in this, and removable most easily by maceration, were several small bodies, generally not larger than a pin-head, like fat in appearance, of a regularly spheroidal shape, of a lemon-yellow colour, and specifically lighter than water. The matter of these bodies is in other respects of an unctuous nature; it communicates an oily stain to paper; it liquefies and becomes transparent at a temperature not exeeding 97° Fahrenheit, so that when attached to the body it must have been fluid; it is insoluble in alcohol, ether, and water, but forms in the volatile oil of turpentine a colourless solution; when this is exposed to the temperature of the spirit-lamp, the greatest part of the volatile oil is evaporated, and there is left behind a transparent and colourless, but viscid and semifluid substance, communicating to paper a stain capable of being rendered less deep, but not wholly removable, by exposure to a pretty high temperature. These results would favour the conclusion that the matter of these bodies is oleaginous; but I have not been able to observe any action of the *aqua potassæ* or *aqua ammoniæ* upon it, after repeated trials both at the ordinary temperature of the atmosphere, and when liquefied by a gentle heat. The sulphuric acid hardens and blackens it; the nitric renders the yellow colour more deep.

Aspect.—The general aspect of this man, though neither robust nor debilitated, communicates, nevertheless, the appearance of a more advanced age than he has yet attained; the hair of the head is grey, and the countenance would lead one to believe that he was at least ten or fifteen years older than he reports himself to be.

General Health.—His health, which for many years after the appearance of the tumours continued unimpaired, has been very indifferent during the last ten years of his life; he has complained much of internal pains, referred in general to the breast, sides, abdomen, and lumbar regions, more particularly described as inclosing him like a zone round the inferior part of the chest. These pains, which are not constant, but recur at irregular intervals, are reported to have been at no period affected by the weather or external temperature. A sensation of flushing and heat through the whole body is likewise ranked among his complaints, but he does not say whether it is simultaneous or alternating with the other symptoms. Respiration is reported to be rendered quick and laborious by ascending a stair, or the slightest exertion. But he has no cough; his pulse on the 26th July was 72, in general quite natural, not more affected by exercise than in other individuals. The tongue is clean, appetite variable, belly reported regular, though at no distant period rather prone to constipation.

Remarks.—Though I have in the preceding account refrained from giving these tumours any name embracing many individual circumstances, of which it would be impossible to satisfy every one, yet there cannot, I presume, remain a doubt in the mind of whoever examines the case, that they answer to the MOLLUSCUM of Dr Willan. All the characters, indeed, correspond so precisely, that I conceive it must be superfluous to say anything tending to establish their generic identity; and I shall confine myself to a few nosographical remarks upon the disease as described by Professor Tilesius, and subsequently by Dr Bateman. In doing this, however, I regret that, after some inquiry, I have not been able to see the monograph of the German professor, and have seen only the print, while a pupil of Dr Thomson, Professor of Military Surgery in this place. From the information communicated by the print, however, and from what Dr Thomson states in his Lectures, and Dr Bateman in his Synopsis, I have no doubt that the case of James Roy, and that detailed by Professor Tilesius, are examples of the same disease. Both of them are tubercular eruptions, of long standing, chronic in their progress, course, and termination; in both the tubercles have the same disposition, the same sensible and organic properties; and both, when examined, seemed, so far as circumstances enable us to judge, to have the same contents.

While these two instances of disease are thus closely allied, they differ very widely from the case which Dr Bateman has so well described, and of which he has given an excellent representation. According to the account of this accurate observer, the tubercles were produced by a contagious agent, and, though slow in progress relatively to other cutaneous affections, were much more speedy than in the two cases lately alluded to. In the course of twelve months from the date of their origin, they had attained a very considerable size, inflamed, and soon after suppurated,—a termination which we never find in the first described species. In Dr Bateman's case, the situation, disposition, sensible properties, and constitutional effects of the tubercles were materially different; they were uniformly sessile, hard and painful, and, besides producing much irritation in the neighbouring lymphatic glands, had a very marked effect upon the general health. In short, from every circumstance in the history of the two affections, I believe we are warranted in viewing them as different species of the same genus; and were it of much consequence to mark their nosographical distinctions, I think it could be done in the following manner:—

Molluscum Diuturnum.—Tubercula corpus fere totum occupantia, sessilia vel pedunculata, mollia, parum sententia, perstantia, valetudini quodammodo nocentia.

Molluscum Contagiosum.—Tubercula vultum atque collum plerumque occupantia, semper sessilia, dura, in suppurationem lentam abeuntia, valetudine raro integrâ.

Royal Infirmary, Edinburgh,
15th August 1818.

To the foregoing account it is perhaps unnecessary to make any material addition. I have merely to say that the bodies to which the names of Tubercles and Mollusca are given, are enlargements chiefly of the sebaceous cutaneous follicles, or what might be named hypertrophy of the sebaceous follicles. These bodies are liable to several morbid states. They are considerably diseased in the affection named Acne; and they are liable to a peculiar thickening of their contents, with obstruction of the orifice, in consequence of which they become enlarged, congested, and sometimes undergo suppuration; while in other instances they form small tumours or wens. When I examined carefully the soft tubercular elevations in the person of James Roy, in general it was possible to trace the molluscous bodies to sebaceous follicles; and this circumstance it was which led me in 1828 to announce the opinion conditionally, that their formation depends on some morbid or vitiated state of the sebaceous follicles.*

On the other hand, it is of great importance to be aware that the morbid conditions of the sebaceous follicles lead to several varieties of cutaneous disease. Not long after the case of James

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* Elements of General and Pathological Anatomy. First Edition, p. 643. Edinburgh, 1828.

Roy came under observation, there was under my care in the hospital another person, on whose back appeared a considerable number of dark-red, hard, firm bodies, oval or elliptical in shape, and with the long axis corresponding to the long axis of the trunk. These bodies were what nosologists would call ACNE; but they were most distinctly and unequivocally the sebaceous cutaneous follicles in a state of enlargement and hypertrophy. These bodies were confined to the back; none were seen either on the front of the trunk or on the extremities; they had no appearance of being either syphilitic or mercurial in origin, although it might be possible to ascribe their formation to one or other, or both of these causes; they did not proceed to suppuration, but were the seat of a disagreeable and uneasy sensation of heat and occasional pain. They were evidently of a more acute character and shorter duration than the molluscous tubercles. They had lasted some months at the time the man was under treatment. They did not seem to affect the health. But they were distinct indications that the health was not good. The digestive functions were disturbed and irregular. The appetite was variable, generally bad. The tongue was furred. The skin was cold, unctuous, and not in the soft pliant state of health. The bowels were constipated.

The eruption became much diminished in number and size under the use of the hot-bath and the infusion of bark with alkali and occasional laxative medicine; and I have no doubt that they would have entirely disappeared, had the patient persevered in the treatment. The man, however, satisfied with the degree of amendment obtained, quitted the hospital before the eruption had entirely disappeared.

It is easy to perceive that this disease differs so much from that which Willan referred to the same head under the name of MOLLUSCUM CONTAGIOSUM, that the fact serves more to show the inadequacy and occasional faultiness of nosological arrangements than to communicate any actual and serviceable information. I shall merely observe, that, first, the ordinary MOLLUSCUM described in the account now given is a very chronic disease; while that called Contagious is comparatively acute, speedy in progress, and of short duration. They differ, in the second place, very widely, in the circumstance of the latter being propagated by a specific matter, while the former is, so far as is hitherto known, entirely incapable of such communication. In the third place the ordinary MOLLUSCUM affects the skin of the trunk and extremities principally, as well as that of the face; while the contagious MOLLUSCUM is, so far as I am aware, mostly observed on the face and neck. I am also satisfied that the chronic MOLLUSCUM either considerably impairs the general health, or is to be regarded as a proof that the health is very much deranged. It is indeed impossible to conceive so great a lesion in the cutaneous functions to exist,

without serious effects on the general health. In short, these disorders, though arranged under the same denomination, agree in no circumstance, except that both affect the sebaceous follicles; and in this respect the contagious and acute form of the disease agrees with several other cutaneous disorders. It is unnecessary for me, however, to advert to the contagious form of the disease, unless in so far as it forms a contrast to the chronic or true molluscous tubercle; because this disease has been ably elucidated by the observations of Dr Robert Paterson, published in the fifty-sixth volume of this Journal, p. 279, 1841.

Since the time when the case above recorded was observed, few important facts have been added to our knowledge of this disease. In the year 1840, Maximilian Maurice Jacobovics, a young physician of Pesth, published a learned Dissertation on MOLLUSCUM, in which he communicated the few known examples of the disease, and illustrated the nature of the disorder by various judicious remarks on its several forms.* As the dissertation of Dr Jacobovics is not very generally known, I think it may not be unseasonable to introduce in this place some notice of its contents.

I have said that, previous to the occurrence of the case of James Roy, the only instance recorded of the disease was that given by M. Tilesius of Leipzig. The monograph of this physician, which was published in 1793, had become so scarce, that the only copy of it which was believed to be obtainable was presented in 1840 by the author, then in a very advanced age, to Dr Jacobovics through M. Ehrenberg. This case Dr Jacobovics republishes as the first in his dissertation. The account is to the following effect.

John Godefrey Reinhardt was born in the year 1742, at Muhlberg, near Misnia. His father was a robust boatman, enjoying excellent health, as well as his mother; and neither of them had ever been affected by any cutaneous disorder. The body of the child was at birth covered with excrescences analogous to those which it presented at the time when he was seen by M. Tilesius; but they were not perfectly developed.

When he came under the observation of M. Tilesius, his skin was covered with excrescences which varied in size from the bulk of a pea to that of a pigeon's egg. Their shape was very variable, being sometimes wart-like, sometimes oval, and in several points irregular, or considerably flattened by the pressure of the clothing or the weight of the person, as in those in the soles of the feet.

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* Du MOLLUSCUM Recherches Critiques sur les Formes, la Nature, et le Traitement des Affections Cutanées de ce Nom, suivies de la Description Detaillée d'une Nouvelle Varieté. Presentée a l'Academie Royale des Sciences de Paris. Par Maximilien-Maurice Jacobovics, Docteur-Medecin de la Faculte de Pesth. Avec Quatre Planches Coloriées Paris. Leipzig. Pesth, 1840. 8vo, pp. 116.

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When he came under the observation of M. Tilesius, his skin was covered with excrescences which varied in size from the bulk of a pea to that of a pigeon's egg. Their shape was very variable, being sometimes wart-like, sometimes oval, and in several points irregular, or considerably flattened by the pressure of the clothing or the weight of the person, as in those in the soles of the feet.

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Roy came under observation, there was under my care in the hospital another person, on whose back appeared a considerable number of dark-red, hard, firm bodies, oval or elliptical in shape, and with the long axis corresponding to the long axis of the trunk. These bodies were what nosologists would call ACNE; but they were most distinctly and unequivocally the sebaceous cutaneous follicles in a state of enlargement and hypertrophy. These bodies were confined to the back; none were seen either on the front of the trunk or on the extremities; they had no appearance of being either syphilitic or mercurial in origin, although it might be possible to ascribe their formation to one or other, or both of these causes; they did not proceed to suppuration, but were the seat of a disagreeable and uneasy sensation of heat and occasional pain. They were evidently of a more acute character and shorter duration than the molluscous tubercles. They had lasted some months at the time the man was under treatment. They did not seem to affect the health. But they were distinct indications that the health was not good. The digestive functions were disturbed and irregular. The appetite was variable, generally bad. The tongue was furred. The skin was cold, unctuous, and not in the soft pliant state of health. The bowels were constipated.

The eruption became much diminished in number and size under the use of the hot-bath and the infusion of bark with alkali and occasional laxative medicine; and I have no doubt that they would have entirely disappeared, had the patient persevered in the treatment. The man, however, satisfied with the degree of amendment obtained, quitted the hospital before the eruption had entirely disappeared.

It is easy to perceive that this disease differs so much from that which Willan referred to the same head under the name of MOLLUSCUM CONTAGIOSUM, that the fact serves more to show the inadequacy and occasional faultiness of nosological arrangements than to communicate any actual and serviceable information. I shall merely observe, that, first, the ordinary MOLLUSCUM described in the account now given is a very chronic disease; while that called Contagious is comparatively acute, speedy in progress, and of short duration. They differ, in the second place, very widely, in the circumstance of the latter being propagated by a specific matter, while the former is, so far as is hitherto known, entirely incapable of such communication. In the third place the ordinary MOLLUSCUM affects the skin of the trunk and extremities principally, as well as that of the face; while the contagious MOLLUSCUM is, so far as I am aware, mostly observed on the face and neck. I am also satisfied that the chronic MOLLUSCUM either considerably impairs the general health, or is to be regarded as a proof that the health is very much deranged. It is indeed impossible to conceive so great a lesion in the cutaneous functions to exist,

without serious effects on the general health. In short, these disorders, though arranged under the same denomination, agree in no circumstance, except that both affect the sebaceous follicles; and in this respect the contagious and acute form of the disease agrees with several other cutaneous disorders. It is unnecessary for me, however, to advert to the contagious form of the disease, unless in so far as it forms a contrast to the chronic or true molluscous tubercle; because this disease has been ably elucidated by the observations of Dr Robert Paterson, published in the fifty-sixth volume of this Journal, p. 279, 1841.

Since the time when the case above recorded was observed, few important facts have been added to our knowledge of this disease. In the year 1840, Maximilian Maurice Jacobovics, a young physician of Pesth, published a learned Dissertation on MOLLUSCUM, in which he communicated the few known examples of the disease, and illustrated the nature of the disorder by various judicious remarks on its several forms.* As the dissertation of Dr Jacobovics is not very generally known, I think it may not be unseasonable to introduce in this place some notice of its contents.

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In several places, and especially on the thigh and the knee, these excrescences form agglomerated and prominent masses. But the most remarkable of all these tumours is situate in the epigastric hollow; its shape it that of a sac or pouch; it is detached from the skin which covers the xiphoid appendix, and hangs to the level of the umbilicus; it is much more flaccid than all the others; its tubercular figure arises from the aggregation of a great number of small excrescences, which contribute to its formation.

The length of this pouch-like tumour is nowhere mentioned. But it must have been from the figure, and its extension to the umbilicus, about six inches. It has a narrow peduncular neck, and the base is the largest part. It is easy to see that, when once it had attained any size, its constant hanging position would increase its volume, and give it the peculiar shape.

The greater number of these tubercles are of a red colour. In a few the colour is an obscure yellow, or a reddish brown. All of them form remarkable prominences beneath the skin, which is wrinkled, and of a dirty earthy colour. In consistence, they are spongy and soft. In some of the largest is seen a small central perforation, from which may be expressed blackish vermiform bodies, the whitish and soft rootlet of which penetrates deep into the substance of the skin.*

In the furrows and folds which are formed at the base of the tumours, and which result from their projection, are seen the perspirable matter, concreted, mingled with filth, which, in the exacerbations of the disorder, give the skin an offensive appearance, and exhale a strong fetid odour.

Along the course of the vertebral column upon the chest, upon the neck, and upon the lateral regions of the abdomen, these excrescences are most numerous.

Upon the head, one of these tumours, which is very large, is remarkable for its encysted appearance. They are much more thinly dispersed on the arms and the feet than upon the trunk. The thighs are sprinkled with spots of a rusty or dirty yellow colour, smooth, and without elevation, and irregular in figure.

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* In medio quorundum maximarum excrescentiarum parvum foramen conspicitur, ex quo nigra corpora oblonga, quae altius in cute albicantem atque tenerum processum habent exprimi possunt, quae vulgo Comedones appellantur.—(Pagina 11.)

Dr Jacobovics observes, that assuredly from this passage it can only be inferred that these tubercles contain atheromatous matter.

This inference may be perfectly natural; but it is of little moment in elucidating the nature of these bodies. An inference much more important is, that this small aperture is the orifice of the sebaceous follicle, and shows distinctly that some of these large molluscous tubercles were really sebaceous follicles, which had, in some manner, become diseased and hypertrophied. As to the alleged atheromatous matter, that is merely the secreted product of the follicle, altered, thickened, and probably diseased. To this observation of Tilesius I attach great importance, because it confirms the views which I had formed before I had seen the account of his case.

The family of Reinhardt looked upon all these excrescences as *naevi*, or moles, caused by a great fright which the mother underwent, while she was pregnant. The two brothers of the patient, so long as they lived, never presented any abnormal alteration in the skin.

It is only gradually, and in the progressive course of life and growth of the person, that these tumours acquired the volume which they possessed when described by Tilesius. The one especially in the form of a bag, which hangs at the base of the sternum, and which, according to the statement of the patient, was scarcely equal in size to the thumb in infancy, owes, doubtless, the large volume which it has acquired, to the constant irritation of daily compression, which converted it into a centre of fluxion. In point of fact, at the close of childhood, his elder brother made him learn the trade of cordwainer; in the course of working at which, as is well known, the epigastric hollow is incessantly subjected to compression, by the application of the last, which takes there its point of support.

The stature of the patient is small and thick; his head is very large, in proportion to the rest of his person; his knees are slightly incurvated; his belly is prominent; and one of his shoulders is more elevated than the other.

The sclerotic is of a dirty yellow colour; and the iris shows itself by its reddish brown colour; the vessels of the conjunctiva are injected; the eyelids present tubercles analogous to those of the rest of the skin. His look is, in general, dull; and at each exacerbation of the disease, vision is disturbed.

The nails of the toes are yellow; the hair is very black and coarse.

The indigence and wretchedness of Reinhardt have, without doubt, contributed to favour the development of the disease.

This singular disorder is further remarkable in this respect, that each month regularly an exacerbation takes place upon some parts of the skin; there especially where the tubercles are more numerous—for instance, on the neck, along the vertebral column, on the hypochondres, and on the abdomen; but this aggravation is most violent on the pouch-like tumour of the epigastric region; where it gives rise to a disagreeable itching, which obliges the patient to scratch the parts. The action of the fingers causes the discharge of an acrid and fetid fluid, which very soon undergoes coagulation; and after the detachment of the crusts thus formed, the excrescences return to their original condition, until a new exacerbation takes place. Each exacerbation is accompanied with shiverings, with heat in the skin, loss of appetite, and febrile disorder. In other respects the quickness of pulse continues during the remissions, and appears to depend on slow habitual fever.

Atmospheric vicissitudes exercise a very manifest influence on the patient. The pouch-like tumour, for instance, becomes then the seat of a burning heat, and of violent pulsations; sometimes of acute pungent pain, or the tumour gives the patient the sensation of a cold body applied over the chest; further, while all the other tumours never furnish anything but an acrid exudation, this is very liable to become inflamed, and soon produces genuine purulent matter. Sometimes it is insensible to the most forcible pressure. Sometimes the slightest touching causes in it intense pain.

These exacerbations concur to increase the intensity of the primary disease, as well as to produce new excrescences.

Reinhardt has been twice married. He has had only one child, who did not live long, but who presented no indication of disease of the skin. His two brothers, whom he survived, have in like manner never suffered any disorder of this kind.

The patient has no habit of taking spirituous liquors.

Excepting some paroxysms of ague and the eruptive diseases incident to childhood, Reinhardt has never undergone any serious disorder. The urine has never shown marks of derangement; the alvine discharges are often diarrhœal. He is frequently attacked by fits of giddiness about nine o'clock in the evening, and with night sweats, which do not weaken him, but which induce thirst.

At the age of thirty years he was attacked by itch, which was cured by means of sulphurous remedies. He has never experienced rheumatic pains. He is occasionally attacked by violent catarrhal symptoms.

He has constantly resisted both extirpation of these tumours and puncture of any one of them, so that their internal structure is entirely unknown.

Dr Jacobovics then quotes from the large work of Alibert some observations on three forms of cutaneous tubercles, to which he applies the name of MYCOSIS. The first of these, MYCOSIS *Frambœsia*, is the Yaws of the West Indies, the *Frambœsia* of nosological authors. The second, which he denominates MYCOSIS *Fungoides*, he represents as the *Molluscum* of Willan, and the Amboyna eruption mentioned by Bontius. To the third, which he designates MYCOSIS *Syphiloides*, he refers the sivvens, and the eruption of Scherlievo and Fiume.

This species of arrangement must satisfy every one who knows anything of cutaneous disorders, that M. Alibert had formed incorrect ideas on the nature of these eruptions. The chronic Molluscum bears no resemblance either to frambœsia or to sivvens.

He then quotes from the same author the description of an instance of cutaneous eruption in a man aged fifty-six, and which appears to bear little resemblance to Molluscum. On this, therefore, it is unnecessary to dwell.

It is equally unnecessary to bestow attention on another case which is quoted from M. Rayer under the name of Molluskiform Cancer, and which is manifestly an instance of tubercular cancer of the right mamma, the stomach, the spleen, and the ovary. This took place in a lady aged forty-two.

Some other notices from Biett, Cazenave and Schedel, and Gibert, are not sufficiently explicit to require special consideration.

Dr Jacobovics states, that in the spring of 1839 he had occasion to see at the Hôpital Saint-Louis two females, aged from sixty to seventy years, in both of whom the person was covered with fungous tubercles. To give the description of these tubercles, he adds, it would be necessary to repeat the description given by M. Tilesius.

The face, the head, the neck, the trunk, and the extremities were sprinkled with these morbid excrescences. At the lower margin of the right hypochondrium in one of these females, and in the other on the neck, one of these tubercles was as large as the fist, and the shape of a pouch. All of them were red, and the most of them secreted in small quantity a sero-purulent matter, which in various points had been coagulated into thin layers, and exhaled a heavy and repulsive odour.

Both of these females had for a long time laboured under profuse vaginal discharges.

The author was unable to collect on these cases more ample information, or to learn anything precise on the antecedent circumstances, because one of the patients only applied for a consultation, and the other, speedily tired with the life in the hospital, returned to her native place, after a short sojourn in one of the wards.

Dr Jacobovics describes, as a second form, under the name of Atheromatous Tubercles, the *Molluscum Contagiosum*, as seen by Bateman and Carswell.

Lastly, as a third form, he describes an example of what he denominates particoloured Tubercles, *Tubercules Bigarrés*, occurring in a man of fifty-six years, and illustrates the appearance of the eruption with two coloured drawings. It is not easy to say what sort of eruption this is. But it is not certain that it can with propriety be referred to the head of Molluscum. From the history of the patient, and some other circumstances, it seems that it ought rather to be referred to some of the secondary eruptions taking place in persons who have suffered from the effects of syphilis.

Dr Jacobovics enters, at considerable length, into the subject of treatment, and he is led to suggest the employment of a great number and variety of remedies; preparations of sulphur, of mercury, of arsenic, of antimony, separately and combined, of nitro-muriatic acid, of sarsaparilla, of guiacum, of bitter-sweet, and, in short, all remedies that have been proposed or employed for the cure of cutaneous disorders

In the instance of the Chronic *Molluscum*, I fear little can be done either in the way of cure or palliation. The warm bath, and keeping the skin as clean as possible by washing, and its secretions in as good a state as may be practicable, by gentle friction, seem to embrace all the remedial means of which the disease admits.

ART. V.—*Remarks on Neumann's Supposed Case of Hydatid in the Anterior Chamber.* By WILLIAM MACKENZIE, M.D., Surgeon-Oculist in Scotland in Ordinary to Her Majesty the Queen.

On the 27th September 1850, immediately after I had removed a CYSTICERCUS CELLULOSÆ from the anterior chamber of a man, in the Glasgow Eye Infirmary, Dr William Thomson handed me the 33d volume of Rust's Magazin für die gesammte Heilkunde, in which is contained Neumann's supposed case of hydatid in the anterior chamber, which has been referred to as a genuine case of that kind, by several systematic authors on eye-diseases, such as Rosas and Chelius, and by myself.

As the case, however much it has been misapprehended by the narrator, is not without interest, and as I conceive it important to reduce it to its proper place among ophthalmic facts, I shall first quote Dr Neumann's paper, and then add a few remarks on it.

"*Remarkable Case of a Hydatid in the Anterior Chamber of a Boy of* 14 *years of Age. By Dr Neumann, Practising Physician in Marienwerder.*

"In February 1829, I undertook the treatment of Julius F. fourteen years old, son of a merchant's widow of this place, as an ophthalmic patient, his left eye having the appearance represented in fig. 1. There was seen in the anterior chamber of that eye, previously sound, a circular, lens-shaped body, with a regular edge, and almost glancing surface, which looked exactly like a bubble swimming in water. It was about 2½ lines in diameter, and seemed to be somewhat more than a line thick.

"If the head of the patient were moved to one or other side, this body proportionably changed its place, slipping, not rolling, towards the outer or inner angle of the eye. Bending the head back produced no change; but if we tried to bring the body towards the upper part of the anterior chamber, for which the patient required to assume a position as if he should stand on his head, the body reached only to the middle of the eye, so that it completely covered the pupil, and showed distinctly that the iris, which in the lower part of the anterior chamber bulged backwards, at its upper part, retaining its vertical position, opposed strong resistance to the body in question.

"The iris was in other respects sound, expanded normally under bright light, and showed distinctly that the body was not only placed before it in the anterior chamber, but also that it was not adherent to it, as the pupil behind it dilated and contracted according to the less or greater influence of the light. In ordinary daylight, if it had already influenced it long, about two-thirds of the pupil were covered by this body, as is correctly represented in fig. 1.

"The field of vision of the patient was not observedly narrowed by this body; and the sight was so good that he could read even small type, although the affected eye necessarily accomplished this alone, as the cornea of the other eye was quite opaque, in its whole extent, from previous ophthalmia.

"As to the constitution of the patient, he was in the highest degree scrofulous. His body was spare; his countenance pale; the abdomen rather large; the glands of the neck, somewhat swoln, showed in different places scars, indicative of previous scrofulous ulcers. The upper lip was thick and turned up, and the skin under the nose and round its edges constantly red, ulcerated, and secreting thin matter.

"The child, as the mother stated, was, with the exception of a running from the ears, outstrikings on its head, and swellings of the glands of the neck, tolerably healthy. The ophthalmia, which, about four years before, had blinded the right eye, had never affected the left, which had always been healthy and free from pain; only about a year before, the mother, as she looked into it by chance, had detected its abnormal state, without, however, suspecting that the same might not have existed from infancy.

"Besides this boy, the woman had other children, some younger than he, others older, who were all more or less scrofulous, but presented no disease in their eyes, with the exception of a daughter of eighteen years, who is completely blind of the right eye, and retains with the left a mere glimpse of light. Ophthalmiæ, ill understood, and possibly ill treated, had obscured both corneæ of this girl; in whom, however, no appearances like that in the boy had been noticed.

"When I had considered in my own mind all the symptoms which the disease in the eye of the boy presented, I believed I had before me a remarkable case of dislocated lens, congenital perhaps, or occurring from some unknown accident, and which had fallen through the pupil into the anterior chamber. I considered the indication to be, to remove the lens through an incision of the cornea, but previously to subdue as far as possible the scrofulous disposition, as I, with only too much reason, dreaded unhealthy inflammation from injury of this sensitive organ. As, besides, the season of the year (February) was very unfavourable for an eye operation, and the patient felt no inconvenience, I sought chiefly by baths and diet to bring about a change in the morbid constitution.

"When two weeks of the treatment had passed, this plan, through an unlucky accident, met with a complete defeat. I had ordered for the elder sister, already spoken of, a collyrium with extract of belladonna, in order to ascertain whether the iris of the left eye, which still retained a slight perception of light, was completely adherent to the cornea. Unluckily this collyrium was applied by the boy of fourteen to both his eyes.

"After some hours, as the patient had laid himself down to have a little sleep, the left eye began to pain him, and I was hastily summoned, and found my patient, previously very tranquil, almost raging with pain. Scarce had I viewed the eye in a supportable degree of light, and learned the pernicious mistake in the use of the eye-water, than I concluded what was the state of matters.

"The eye presented an appearance such as is represented in fig. 2. By the influence of the extract of belladonna, the dilatation of the pupil had become so great, that it had allowed the body, which swum in the anterior chamber, to slip partly through it. From its considerable size, it filled the posterior chamber so completely, that it remained sticking in the pupil, which had again contracted, and was drawn into an oblong shape. With one-third projecting before and at the upper part of the pupil, while the lower third reached down behind it, the middle third of the body occupied the pupil itself. Of course, the ciliary nerves must thereby be continually irritated, and hence the fearful pain of the eye.

"After I had dropped a strong solution of belladonna into the eye, and had tried by movements to free the body from its imprisonment, which did not succeed, I determined that next morning (it was 4 o'clock P. M., of a very cloudy day) I should relieve the eye by an operation. As the eye was very deep-set, the iris, at its lower part, seemingly close to the cornea, and the patient, on account of the pain, might prove restless, I selected keratonyxis as the method of operating.

"I performed the same next morning at 9 o'clock, passing a straight needle through the cornea, reaching the upper part of the body, and depressing the same slowly into the bottom of the eye. The pupil appeared free, and the pain was completely removed.

"Cold fomentations were now used, and leeches were applied to the temples; while nitre, and afterwards mercury, were given internally.

"Everything went on well till the third day. Then, however, the lids began suddenly to swell, although only an insignificant degree of pain was present; and twelve hours afterwards a plentiful discharge of matter took place. Although the patient had always as yet a perception of light, which could not proceed from the other eye, as this, as already noticed, had been blind for years, I was too well convinced of the unfavourable result of the operation, as pus, not puriform mucus, was discharged from between the lids. I attempted, then, as soon as the swelling had somewhat abated, to open the eye, and found, what I suspected, the bulb completely destroyed by suppuration.

"True to strictest fact have I related this case, not concealing that I believed it to be the dislocation of a lens into the anterior chamber; although now, when I have considered the matter more maturely, I entertain an entirely different, and, as I trust, more correct idea of the disease.

"I am now of opinion that the vesicle-like body was not the lens, but a hydatid, and that on the following grounds.

"1. According to the account of the mother, it is certain, that at least for a whole year the body had lain in the anterior chamber. Were it the lens, how should it, separated from its organic connexions, have been able for a year to resist the influence of the aqueous humour without becoming quite dissolved, or at least perceptibly affected? If it is alleged as a proof of the possibility of such an event, that hard cataractous lenses, depressed into the bottom of the eye, often lie there for years unchanged, as experience has shown in several cases, an explanation becomes still more difficult how, in our case, a lens during the long period of a year should not commence to be opaque, when the fluids effused between its concentric laminæ must have become stagnant, and thereby visible.

"2. If the lens had fallen into the anterior chamber, and covered the pupil only partially, not only could it not accomplish the regular refraction of the rays of light, but must have even disturbed that process; besides, as its place in the posterior chamber remained unoccupied, the eye must be regarded like one freed from cataract by extraction of the lens: thus, it were inexplicable how the patient could see so well as to read even small type, as the history of the case declares. Suppose, on the other hand, that the lens retained its natural situation, and that only a hydatid partially covered the pupil of an otherwise sharp-sighted eye, it is easy to explain how this, as it was perfectly transparent, must have given very little hindrance to the rays of light which passed through it; besides, that over it many of the rays of light could reach the interior of the eye without being interrupted by it.

"It seems to me, then, for these reasons, that the body was a hydatid, which had acquired a lenticular figure from the peculiar form of the anterior chamber; had become developed while swimming freely in the aqueous humour, and probably during the growth of years had at length reached this size. It was so very transparent, as it existed in so extremely pure and transparent a medium, while the hydatids which are likewise singly found swimming often in the ventricles of the brain are more opaque, as the surrounding fluid is more turbid. We must assume that such vesicles, floating about without any fixed organic connection, are generated by the surrounding fluid, and model themselves after it. And even if they have no independent life, that is, manifest no proper motion, and contain in their interior only common lymph, as in our case; so are they without doubt produced by equivocal generation, and are to be reckoned in the family of intestinal worms; and it is to be admitted, that nature, impeded through weakness of the maternal structure or some other cause, is arrested in her generative impulse, and brings forth, not independent beings, but only cysts and other parasitical productions, which exhibit a particular internal organic activity at the expense of the greater organism, without thereby deserving the name of living beings.

"Nature never makes a bound, and her transitions from one genus to another, from one family, from one class, from one of her orders to another, is, from the great multiplicity of her productions, so gentle, that any systematic arrangement of her works can never lay claim to well-marked divisions.

"I have long delayed to lay the above related case, with my views of it, before the medical public, partly because I was not myself clear as to the real nature of this disease of the eye, partly because the issue of it was so unlucky and vexatious, and I would not willingly depart in the narrative from the strictest truth. As I have already, however, in the short space of my practical career, certainly shown several times that I understand how to perform the more difficult eye-operations with dexterity and success, and to direct their after-treatment; on that account I need not fear, by any those who know me intimately in my practice, to be regarded as the sole cause of the sad fate of this boy. I put off then no longer to give publicity to, as I believe, this extremely remarkable case."

Such being the narrative, so minutely and faithfully given by

Dr Neumann, the points of diagnosis between a dislocated lens in the anterior chamber, and a *cysticercus* in the same situation, are now to receive our attention. I may premise, however, that the hydatid or cyst-worm, which has in a few instances been met in the anterior chamber of the human eye, is the *cysticercus telæ cellulosæ* of Rudolphi, or *hydatis finna* of Blumenbach. This entozoon is occasionally found in the interfascicular cellular tissue of the human muscles, and is there inclosed in an adventitious capsule, presumed to be the result of the condensation of the surrounding substance by adhesive inflammation, excited by the presence of the entozoon. When its habitation is the anterior chamber, nothing of this extraneous capsule exists, the entozoon being free in the aqueous humour, and confined only by the anterior crystalline capsule and iris posteriorly, and the cornea anteriorly. The same species of *cysticercus*, or one nearly allied to it, exists occasionally in the ape, the pig, the rabbit, the hare, and other animals. In the RODENTIA, groups of *cysticerci* are not unfrequently attached to the mesentery, and are surrounded by extraneous cysts, similar to those they have when living among the muscles.

The most conspicuous part of the *cysticercus cellulosæ* is a cyst, of a globular figure, commonly called the tail-vesicle, measuring, when the animal is resident in the eye, from a tenth to three or four-tenths of an inch in diameter; and from which springs a body, formed of a series of rings, and capable of being either completely retracted into the tail-vesicle, or elongated so as to measure three or four times in length the diameter of the tail-vesicle. The body is surmounted by a head, on the sides of which are four lateral suckers, and which ends in a *rostellum*, surrounded by a corona of claws; and from the middle of which is projected from time to time a sharp spiculum. This last, which I noticed in the individual *cysticercus* referred to at the beginning of this paper, is probably an organ for irritation; while the claws are supposed to serve the entozoon for holding on to the tissues among which it is placed, and the four lateral suckers for the imbibition of nutriment. When a *cysticercus* inhabits the anterior chamber, the tail-vesicle, body, and head are quite visible to the naked eye; and, with the aid of a short-focused lens, the parts about the head are in general readily recognised.

Such, then, is the sort of creature which Dr Neumann ultimately came to the conclusion had existed in the case which he has published, and constituted the body which he depressed with the needle into the vitreous humour; departing thus from his original and (as I conceive) true notion, that his patient had a dislocated crystalline lens in the anterior chamber.

The mere *history of* a case of dislocated lens, or of one of *cysticercus*, may not throw much light upon the diagnosis.

It has generally happened that the appearance of the entozoon has been preceded by an attack of ophthalmia, and, as this has subsided, the *cysticercus* has attracted notice. By the time that it has become an evident object in the anterior chamber, the eye has in every other respect assumed a perfectly healthy appearance.

There are two varieties of dislocation of the lens into the anterior chamber. The one is distinctly and entirely traceable to a blow on the eye; the other often seems spontaneous.

When a blow is the cause of the displacement, the capsule having been rent at the moment of the accident, the lens generally lies in contact for a time with the posterior surface of the iris; and afterwards, though perhaps not for months or years, passes through the pupil into the anterior chamber. In some cases it has already become opaque before doing so; in others, it remains transparent. The eye, generally healthy previous to the injury, is now completely amaurotic.

In what are termed spontaneous dislocations of the lens, the patient is generally of a scrofulous habit, and the eye has been imperfectly amaurotic, and the iris tremulous, previously to the dislocation taking place. A fall on the back of the head may give rise to this condition, in one or both eyes. Some slight tap on the eye may occasion the immediate displacement of the lens from the cavity of the capsule, or no such exciting cause may be noticed. The lens may lie for months or years in a transparent state, behind the iris, and out of the capsule; its lower edge may remain behind the iris, while its upper edge projects through the pupil into the anterior chamber; it may pass forward through the pupil entirely, and repass into the posterior chamber. Although far from being perfectly sound, the retina may retain a considerable share of sensibility.

The history, then, of a purely traumatic case of dislocation of the lens may be sufficiently diagnostic; but not so, one of spontaneous displacement.

The first glance we get of a *cysticercus* in the anterior chamber almost uniformly excites the suspicion, that the practitioner has before him a case of dislocated lens. The tail-vesicle, of a spherical form, and semi-transparent appearance, is supposed for a moment to be the nucleus of a crystalline lens, reduced by absorption, and fallen forwards through the pupil. A very little examination of the following particulars should dispel the deception.

1. *Figure.*—The dislocated lens is, of course, lenticular in form. Even when considerably reduced below its original size by absorption, it still preserves its original figure. The tail-

vesicle of the *cysticercus* is in general perfectly globular, or if at times it becomes somewhat flattened, it never presents so acute an edge as the crystalline lens. With the tail-vesicle towards the cornea, and the head turned back into the pupil, the resemblance to the nucleus of the crystalline lens is more likely to impose on the observer than in any other position of the entozoön. Sometimes the body and head, retracted towards or into the tail-vesicle, are turned towards the cornea, and then they appear as a very white opaque spot on the anterior surface of the tail-vesicle. By far the most common attitude of the *cysticercus* is with its body and head depending from the lower surface of the tail-vesicle. If the entozoon is young, the body and head look, in this position, like a fine white thread; if it is older, they show a series of rings, and form, in either case, a characteristic which at once distinguishes the entozoon from a dislocated lens. Had Dr Neumann's case been one of a hydatid, he could not have failed to remark the body and head of the entozoon.

2. *Position.*—The dislocated lens, fairly in the anterior chamber, always touches with its lower edge the bottom of that cavity, reaching with its upper edge to the height of about one-half of the pupil. The tail-vesicle of the *cysticercus* never touches the bottom of the anterior chamber. It lies either entirely in the pupil, or half in the pupil, half between the iris and cornea, below the pupil. Its globular figure and considerable diameter prevent it from reaching, as the thin edge of the lens does, to the bottom of the anterior chamber. It is only with its head and body, in a state of elongation, that it is able to reach to the angle between the edge of the cornea and that of the iris.

3. *Motions.*—The motions of a dislocated lens are only those which are impressed on it by changes of position of the head of the patient. The *cysticercus* exhibits voluntary movements.

It has sometimes happened that dislocation of the lens has been detected by an observer's noticing that the patient had something wagging in the inside of his eye. Before it slips through the pupil a dislocated lens may be observed to be tremulous; and after it comes into the anterior chamber, it slides, as Neumann noticed in his case, from side to side, as the head of the patient is inclined to one or other shoulder.

When the *cysticercus* is of small size, as in Mr Logan's case, it also may be made to shift from side to side, but not so rapidly as the dislocated lens; its rounded form renders the motion slower, and as the head and neck are of greater specific gravity than the tail-vesicle, they always assume the most depending point. If the head of the patient is bent back, so that the upper edge of the cornea becomes more depending than the lower edge, the *cysticercus* slowly revolves and settles, like a little balloon, with its head behind the upper edge of the cornea, while the tail-vesicle covers the upper portion of the pupil. When the entozoon is larger this movement cannot be effected, owing to the tail-vesicle having become voluminous enough to be impacted between the crystalline capsule and the cornea.

Allowing the *cysticercus* to settle into its usual position, the careful observer speedily discovers spontaneous movements, both of the tail-vesicle and of the body and head. The tail-vesicle is seen to be affected from time to time with a fine undulatory motion over its surface. It also frequently changes its shape, one or more portions of its circumference becoming more or less flat, so that, in place of an almost perfect sphere, it presents a three or four-sided figure. The motions of the head and body are still more remarkable. If the entozoon is small, it is seen to dart its head, by an elongation of the body, to the bottom of the anterior chamber, and then to retract it close to the tail-vesicle, so that the body and head are no longer visible, except as a point of a dense white colour, contrasting strongly with the semitransparent appearance of the tail-vesicle. In larger individuals the head is not merely thrust down, but is moved along towards the nasal or temporal side of the anterior chamber, oftener towards the latter. In the much developed individual which I extracted 27th September 1850, the body always rested in this position, reaching along the floor of the anterior chamber till the head rose in the angle of that cavity, at its temporal edge, to a level with the middle of the pupil. The body, in this instance, presented a series of swellings, which gave it the aspect of a small bowel. By applying cold water to the eye, the body could be made to retract considerably, and the head to shift its position.

All these motions are visible to the naked eye. With the aid of a short-focused lens, the movements of the four lateral suckers are distinctly seen, and also that of the slender spiculum, which darts out and in of the rostellum.

Dr Neumann says nothing of any examination of the body which he saw in the anterior chamber with the aid of a lens; but it is plain, from his narrative, that he studied the motions impressed on that body by the changes of position of the patient's head, with sufficient attention to have noticed any of the coarser movements of a *cysticercus*, had the body which he saw been a living animal. As no such motions were noticed by him, the conclusion is, that what he saw was of a totally different nature.

4. *Colour and Transparency. State of Vision.*—A dislocated lens in the anterior chamber, to be confounded with a *cysticercus*, would require to be opaque. If it remains transparent, it looks as if a drop of water, of different specific gravity and different power of reflecting light from the surrounding fluid, were lodged

in the aqueous humour, while its circumference presents the very characteristic appearance of a splendid narrow gilt ring. The body of the lens in this case permits the iris to be seen through it; and though its malposition renders the eye myopic, it does not prevent the patient from being able to see large objects, or even, in some instances, to read, with the affected eye.

Dr Neumann describes the body which he saw as glancing on its surface. This corresponds with the appearance of a dislocated lens, yet retaining its transparency; whereas the surface of a *cysticercus* is of a pearly semitransparent white colour, not polished nor glancing, but covered over with perfectly opaque minute white spots and streaks.

The vision of the patient is impeded by a *cysticercus* in proportion to the size which the entozoon has attained. When it is large enough to cover the whole pupil, the eye sees no object, but merely light and shade. When the hydatid is so small as to leave the upper part of the pupil uncovered, the patient sees objects held above the level of the eye. Sometimes, also, the tail-vesicle becomes so contracted or changed in figure by the spontaneous movements of the entozoon, that part of the circumference of the pupil appears in view, and objects then become discernible.

On the whole, then, an opaque dislocated lens in the anterior chamber is not very unlike in colour to a *cysticercus;* while a transparent lens in that situation is easily distinguished from the entozoon, both by its allowing the pupil to be seen through it, and by the glancing ring of reflected light, of a yellow colour, which surrounds its margin. Vision is null when an opaque lens in the anterior chamber is the result of a blow; when a transparent lens is in that situation, the vision is myopic; and, according to the state of the retina, variable in point of acuteness. The retina is perfect in cases of a *cysticercus* in the anterior chamber; while the transmission of light through the pupil, and the vision of the eye, vary with the size and movements of the tail-vesicle.

Dr Neumann has illustrated his case by two figures, which bear only a very remote likeness to the appearance of a *cysticercus*, but represent, with tolerable fidelity, a dislocated lens.

Fig. 1 represents the body he describes, lying at the bottom of the anterior chamber, where, as I have already stated, no *cysticercus* has been seen. The upper half of the pupil is uncovered; the lower half appears through the body, which occupies the anterior chamber. The narrow ring of shining light, reflected by the circumference of a dislocated lens, is represented in this figure.

Fig. 2 shows a lens lying within the pupil, with its posterior surface turned upwards, and its anterior surface downwards, while one half of its circumference projects towards the cornea, and the other half into the posterior chamber. It is plain, that if the crystalline lens occupied its natural place (and the contrary is not hinted at by Dr Neumann in his case), no *cysticercus* could assume the position here represented. Were a *cysticercus* to get within the circumference of the pupil, this aperture, on contracting, would cause the *cysticercus* to slip forwards out of its grasp.

The practical deduction drawn from Dr Neumann's case has been, that belladonna should not be applied round the eye in cases of *cysticercus* in the anterior chamber, lest the entozoon, becoming embraced by the pupil, might give rise to severe pain, and to such irritation, that no farther application of belladonna might suffice to dilate the pupil, and set the *cysticercus* free. I conceive it impossible that such an accident could follow the dilatation of the pupil by belladonna. At the same time, there seems no purpose to be served by dilatation of the pupil, if the surgeon is about to extract a *cysticercus* from the anterior chamber, through a puncture of the cornea, which is evidently the proper practice under such circumstances.

Glasgow, 25th November 1850.

Art. VI.—*Vital Statistics of New Orleans.* By James Stark, M.D., F.R.S.E., F.R.C.P.E.

The city of New Orleans, the commercial capital of the State of Louisiana, and the great western port of the American Union, is situated on an alluvial flat on the left bank of the Mississippi, about 104 miles above its debouchure into the Gulf of Mexico. The city is not only built on a marshy alluvial soil, but is surrounded with marshes, and is only about four miles distant from the great Lake Pontchartrain, between the level of which and that of New Orleans there is not exceeding a difference of eighteen or twenty inches. The greater portion of the ground on which New Orleans is built, is from three to nine feet below the high water level of the Mississippi River; and is only kept from being periodically inundated by an extensive embankment called the Levée. This embankment is from four to ten feet in height, from twenty to forty feet in breadth, and extends 43 miles below the city, and 120 miles above it. The river opposite the town is from 110 to 160 feet deep.

The city itself is laid out in regular square blocks, each square having a frontage of 319 feet, and the streets having a width of 40 feet. In the more modern parts of the city the houses are substantially built of brick; but in the old parts of the town and in the suburbs, wood and plaster are the materials of which they are chiefly constructed. Most of the streets are provided with broad foot pavements; several, however, are still unpaved, and the drainage of all is imperfect.

The water used in the city is chiefly rain water, collected from the roofs of the houses, and preserved in large cisterns. Those who wish it, however, may be supplied with that necessary element by a public company. The water supplied by this company is pumped from the river into a reservoir which is about thirty feet above the level of New Orleans, and is distributed by means of pipes through the city. The corporation also bring water from the river into the town by means of a pipe about a mile in length; but this supply is solely used for the purpose of washing the streets and drains during the hot season, so as to remove the filth which so rapidly accumulates, and by its corruption taints the air.

About twenty years ago a company was formed for the purpose of draining the marshes lying between the city and Lake Pontchartrain. This was effected by means of two powerful steam engines raising the water from ditches cut through these marshes. This great undertaking dried and brought into cultivation about 35 square miles of surface; and, according to the latest accounts we have received, it appears, that since that period the surface of the ground has risen at least ten inches above its former level. The effect of the drainage of such a large extent of swamp is said to have had a manifestly beneficial effect on the healthiness of the city.

Situated in north latitude 29° 58′, it enjoys an almost tropical climate; and the evaporation from the large expanse of marsh and water around it causes the air to be always more or less completely saturated with moisture. Its mean annual temperature varies from 69 to 70° Fahr., and the extreme annual range of temperature from 33 to 88°. Even in the hottest summers, probably in consequence of the great evaporation, the thermometer in the shade rarely exceeds 90° Fahr. The daily range of temperature is extremely small; in the summer months being from 5 to 8° daily, and in the winter and spring months from 8 to 12° daily. On very rare occasions the daily range has been observed so high as 15°.

The annual fall of rain averages from 55 to 60 inches. July is *par excellence* the rainy month; the fall averaging 15 or 16 inches during that month. October is the next most rainy month, then June. March is the driest month of the year, the monthly fall of rain not in general exceeding two inches, sometimes being considerably below that amount.

The average number of rainy days is 59 or 60; of fair days, 200.

During the year 1849 the winds blew as follows: S. 76 days; NE., 71 days; N., 66 days; E., 54 days; SE., 31 days; NW., 19 days; W., 14 days; SW., 12 days; and the remaining days of the year light variable winds, or calm.

The barometric range is not great at New Orleans. It is greatest in February, the daily range being 0·08 of an inch; the monthly range, however, is 0·81 of an inch, viz., from 29·70 to 30·51 inches. The range is least during July and August, amounting to about 0·04 of an inch daily, or 0·27 of an inch during the month, viz., from 29·89 to 30·16 inches. The average pressure of the atmosphere there is 30·057 inches; and the extreme barometric range during the year from 29·58 to 30·51 inches. The mean barometric pressure is highest in January and February, and lowest in May.

In consequence of the extremely favourable commercial position of New Orleans, the increase of its population has been very rapid, but irregular. Thus, in 1817, the number of the population amounted only to 17,242 persons. In 1830 it had increased to 46,310 persons; but made such rapid strides during the next ten years, that, in 1840, the inhabitants amounted to 102,193 souls. Since then its increase has been much slower. A state census (which we have not seen) was taken in 1847, and from it it is calculated that the population, in 1849, amounted to 105,398 souls.

This population is of a very composite character. Like most American towns, it may be divided into three distinct classes:—1st, Whites; 2d, Free Blacks; 3d, Slaves. The slaves in 1849 amounted to 24,618 persons; but not being able to obtain a sight of the extended census, we are only able to calculate the proportion of the free blacks from the proportion they bear to the general population in the State of Louisiana. In this way we obtain the following numbers as the proportion of the different classes in the population of New Orleans in 1849:—

Whites, . . .	69,588
Free coloured, . .	11,192
Slaves, . . .	24,618
	105,398

The great majority of the whites are foreigners,—a fact easily intelligible from the rapid increase of the city. The native-born inhabitants do not amount to a third of the white population, and a considerable proportion of these are of French extraction. The remainder of the white population consists of natives of the Northern States, of British, French, Portuguese, Dutch, Germans, &c.

The threatened approach of the cholera in 1848, induced the authorities to pass an act for the establishment of "a Board of Health in and for the Parish of New Orleans," one of whose special duties it was, "to make out an annual report to the several councils, as to the health of the city for the preceding year, and to suggest means for improving the same." In fulfilment of this act, a Board of Health was established, and their first report was printed in 1850, having reference to the year 1849. This report, though it greatly disappoints us, and leaves untouched most of the subjects on which it was most desirable information should have been communicated, so far makes amends for these omissions, by putting it in our power to supply, so far, these omissions, by giving in their appendix three large tables, from which we extract most of the facts relative to the mortality, about to be commented on.

It may be remarked, that, previous to the publication of this document, we knew almost nothing of the mortality prevailing among the inhabitants of the southern cities of the American Union. The only facts which enabled us to guess at the mortality which might prevail, were those published in that valuable official document, the "Statistical Reports of the Sickness and Mortality in the Army, United States of America," drawn up by Dr Thomas Lawson. From this report it appears that the United States Army, when serving in the forts situated in the Lower Mississippi District, were, on a ten years' average, cut off at the rate of 53 annually out of every 1000 of mean strength; or one death every year out of 16·73 men. This proportion did not include the deaths from epidemic cholera, which would have raised the proportion much higher.

By the first report of the Board of Health of New Orleans, it appears that, in 1849, there died in that city 9862 persons, being in the proportion of one death out of every 10·69 inhabitants; or 93·6 deaths out of every 1000 living.

As this large mortality was partly occasioned by the cholera, in order to arrive at the average deaths in ordinary seasons, and from ordinary causes, we must deduct from the above number the deaths from cholera, amounting to 3176, and the still-born, numbering 290. This leaves only 6466 as the number of deaths from ordinary causes, which yields a proportion of one death out of every 16·41 living; or 60·6 deaths annually out of every 1000 of the general population.

This excessive mortality prevailing at New Orleans will be better manifested by contrasting it with that of some of the more northern towns of America, of which we possess the statistics. Thus,—

In Lowell,	14·4	deaths annually occur out of	1000	inhabitants.
Boston,	20·3	„ „ „	1000	living.
Baltimore,	25·6	„ „ „	1000	„
New York,	26·3	„ „ „	1000	„
Philadelphia,	32·7	„ „ „	1000	„
New Orleans,	60·6	„ „ „	1000	„

In New Orleans the following was the distribution of the 9862 deaths, which occurred there during the year 1849, in so far as relates to the countries of which the persons were natives:—

Foreigners,	3569
Natives of United States,	505
Natives of Louisiana,	29
Natives of New Orleans,	774
Slaves, and unknown,	4985

This table corroborates what was formerly stated as to the small proportion of native-born residents in New Orleans, and demonstrates that the chief portion of the inhabitants is composed of persons who are immigrants or settlers.

The following Table exhibits the age at death of the persons who died at New Orleans during the year 1849, arranged according to sex and colour:—

TABLE OF AGES.

Ages.	Whites.		Coloured.		Total
	Males.	Fem.	Males.	Fem.	
Under one month,	167	92	35	34	328
One month to 1 year,	248	225	84	57	614
1 to 5 years,	367	336	98	102	903
5 „ 10 „	154	117	36	35	342
10 „ 20 „	255	139	78	58	530
20 „ 30 „	1352	435	126	78	1991
30 „ 40 „	1125	330	87	61	1603
40 „ 50 „	561	159	54	59	833
50 „ 60 „	222	84	28	48	382
60 „ 70 „	102	37	19	34	192
70 „ 80 „	38	31	13	19	101
80 „ 90 „	8	14	11	15	48
90 „ 100 „	1	4	2	13	20
105			1		1
110				1	1
130				1	1
Unknown,	813	338	325	206	1682
Total Deaths,	5413	2341	997	821	9572
	7754		1818		
Still-born,	133	87	39	31	290
	220		70		

From this table it appears, that of the white population, 7754 persons died during the year 1849, in the relative proportion of 5413 males, and 2341 females. This great disparity in the proportion of the sexes of itself proves that the greater proportion of the whites inhabiting that town consists of persons drawn thither from other quarters of the globe for trade or commerce; and we all know that the necessary consequence of this is a great preponderance of males. The preponderance of the male sex is not observed to the same extent among the coloured inhabitants. The above table shows that there died of coloured persons 1818 individuals, in the relative proportions of 997 males and 821 females,—a proportion of sexes very nearly the same as that existing among the living coloured population.

A comparison of the proportional mortality among the white and coloured races at New Orleans exhibits some striking results. By the statement of the population above given, it appears that the white population in 1849 numbered 69,588 persons. Of these, 7754 died during the year,—being in the proportion of one death out of every 8·97 white persons, or 111·1 deaths out of every 1000 living. To arrive at the average number of deaths among the white inhabitants of the town, we must deduct the deaths from the epidemic cholera, amounting to 2623, leaving 5131 as the annual deaths among the white population from the ordinary causes of mortality. This gives a proportion of one death out of every 13·5 persons, or 73·7 deaths out of every 1000 white inhabitants.

The coloured population in 1849 amounted to 35,810 persons. Of these, 1818 died during that year; being in the proportion of one death out of every 19·7 living, or 50·7 deaths in the year out of every 1000 of the coloured population. As experience has shown that the deaths from epidemic cholera are just so many added to the usual mortality of the place, we must deduct them (amounting to 553) from the above number, when there is left 1255 as the usual number of deaths in the year among the coloured races. This gives a proportion of one death out of every 28·5 living, or 35·0 deaths in the year out of every 1000 coloured persons.

These facts then exhibit the great disparity between the effects of the climate of New Orleans on the white and coloured races, as the following summary demonstrates.

One white dies annually out of every			13·5 white inhabitants.
One coloured	do.	do.	28·5 coloured do.

In other words, the climate of New Orleans is more than twice as fatal to the white as it is to the coloured races.

These facts are quite passed over in the Report of the Board of Health, which strains at the effort to conceal the true state of matters, and make the mortality appear as trifling as possible.

The want of the particulars relative to the ages of the living prevents us instituting a close comparison between the mortality of the white and coloured races at different periods of life; and as the great preponderance of males between the ages of 20 and 40 destroys the natural proportion of deaths in the males, the ratio of mortality at different periods of life can only be calculated for the females.

The following table exhibits the ratio of mortality at different periods of life in the white females and in the coloured females. As we know not the ages of the living, the columns for the white and coloured females are not comparable with each other, but they illustrate very well the ratio of mortality of each class separately, at different periods of life.

AGES.	WHITE FEMALES.		COLOURED FEMALES.	
	No. of Deaths.	Ratio per 1000 Deaths.	No. of Deaths.	Ratio per 1000 Deaths.
Under 1 year, ...	317	158·	91	148·
1 to 5 years, ...	336	167·	102	165·
Total under 5 years,	653	326·	193	313·
5 to 20 years, ...	256	127·	93	151·
20 to 60 do.	1008	503·	246	400·
Above 60 do.	86	42·	83	118·
Total,	2003		615	

This table exhibits some curious results. Though more than two whites die for every one coloured person in proportion to their respective populations, it is interesting to remark that the relative proportion to the total deaths under 5 years is very nearly alike in both white and coloured females; and is proportionally less in the white females from 5 to 20 years of age. From the proportional mortality, however, at ages above 20, it is very apparent that the chances of life are much superior to the coloured than to the white persons, and the ages attained by the coloured manifestly greatly exceed those reached by the whites. From the peculiarity in the ages of the population at New Orleans, the great majority being settlers in the prime of life, it is quite apparent that no conclusions having the most distant approach to the truth could be drawn from a calculation of the mean age at death. From the single circumstance that the majority of the deaths occurs among persons between the ages of 20 and 40, who have been born and reared elsewhere, but have come to New Orleans to settle and to die, it is manifest that the mean age at death in this most unhealthy town must exceed that of even the most healthy town of America.

It has frequently been stated relative to New Orleans, and the latest works on America repeat the statement as if it were a fact, that the mortality occurring among the newly-arrived settlers is much greater than among the old residenters. This statement rests on no authority; and it may be very confidently asserted the reverse is the truth. In every tropical climate of which we possess the statistics, it has been found that the mortality increases with length of residence, and it is extremely unlikely that New Orleans will prove any exception to this universal and well established law of nature.

Before leaving this table, attention may be directed to the fact of the preponderance of males among the still-births in both the white and coloured races. The same fact holds good under every climate and in every race. A greater proportion of males than of females dies before birth, during birth, and during one or two years after birth.

The next table exhibits the principal Diseases which proved fatal to the white and coloured inhabitants of New Orleans during the year 1849.

TABLE OF DISEASES.

Class.	Disease.	Whites.	Coloured.
I.	Yellow fever,	766	3
Zymotic.	Typhoid fever,	158	20
	Typhus fever,	159	5
	Remittent fever,	17	1
	Intermittent fever,	41	5
	Scarlet fever,	16	6
	Cholera morbus,	74	35
	Epidemic cholera,	2623	553
	Cholera Infantum,	29	11
	Croup,	41	9
	Diarrhœa,	223	21
	Dysentery,	290	35
	Hooping-cough,	22	5
	Measles,	9	1
	Small-pox,	78	55
	Other zymotic diseases,	191	26
II.	Cancer,	5	1
Sporadic	Debility,	153	29
Diseases.	Dropsy,	41	19
	Abscess,	6	2
	Scrofula,	6	4
	Other sporadic diseases,	24	18
III.	Apoplexy,	64	37
Nervous	Congestion of brain,	95	22
System.	Cerebritis,	72	25

Class.	Disease.	Whites.	Coloured.
	Convulsions, fits, ...	248	62
	Delirium tremens, ...	56	8
	Epilepsy, ...	7	3
	Hydrocephalus, ...	16	7
	Meningitis, ...	41	24
	Tetanus, ...	42	17
	Trismus nascentium, . .	113	59
	Paraplegia, paralysis, . .	5	2
	Encephalitis, ...	10	5
	Hemiplegia, ...	1	1
	Intemperance, ...	15	4
	Softening of brain, . . .	7	0
	Other brain diseases, . .	35	8
IV.	Phthisis, consumption, . .	445	147
Respiratory	Pneumonia, ...	51	24
Organs.	Pleurisy, ...	17	4
	Bronchitis, ...	18	6
	Catarrh, ...	19	15
	Laryngitis, ...	16	3
	Sunstroke (?), ...	19	1
	Asthma, ...	3	0
	Other diseases, respiratory organs,	54	29
V.	Heart, &c., disease . . .	53	32
VI.	Ascitis, ...	17	1
Digestive	Dentition, ...	79	23
Organs.	Gastritis, enteritis, &c., . .	296	88
	Liver disease, ...	41	9
	Colic, &c., ...	8	3
	Marasmus, ...	48	17
	Other diseases of organs of digestion,	15	12
VII.	Urinary and kidney diseases, .	10	3
VIII.	Childbirth, ...	11	7
	Uterine, &c., diseases . .	9	3
IX.	Rheumatism, ...	4	1
	Joint, &c., disease . . .	4	0
X.	Integumentary diseases, . .	3	0
XI.	Old age, ...	16	38
XII.	Accidents, murders, violent deaths,	217	44
	Suicides, ...	3	1
	Not ascertained, ...	481	164
	Total deaths,	7754	1818

The table from which the above is extracted presents some laughable peculiarities. Thus gastric, nervous, ataxic, central (what is that?) scarlet, mesenteric and puerperal fevers are put as forms of ague-fever. This must be attributed to a printer's error. Anæmia, usually considered a sporadic disease, finds a place in the New Orleans nosology under diseases of the nervous system, while "sunstroke," usually reckoned a disease of the nervous system, is classed among diseases of the organs of respiration. Disease of the spinal marrow, beyond all doubt a disease of the nervous system, is placed under diseases of the joints and organs of locomotion and recto-vaginal cancer under disease of the *urinary* organs. These and such like are the curious anomalies which the New Orleans table of diseases exhibits, and makes us fear that pathological knowledge in that far-famed commercial capital is not in such a satisfactory state as it ought to be.

The above table shows that the chief diseases at New Orleans, and those which characterise the region in which it is situated, are intermittent and yellow fevers, diarrhœa, dysentery, endemic cholera, and more or less inflammatory affections of the stomach and bowels, consumption, pneumonia, and affections of the liver. These, in fact, are the diseases usually prevalent in intertropical climates, where the region is marshy, the air saturated with moisture and miasmatic effluvia, and the heat is great.

In all tropical climates fevers form the great outlet of human life; and New Orleans is no exception to the general rule. The Board of Health there, however, endeavour to prove that it is not only an exception to this law of nature, but that the proportional mortality of deaths from fevers is small. On consulting the table, we find that the deaths from diseases termed fevers amounted to 1508 in number, giving a proportion of one death out of every 69 of the general population; or 14·3 deaths in the year out of every 1000 persons living. The following table exhibits the proportional mortality from fevers in some other of the American towns.

Boston	loses annually by	Fever	1·25	out of every	1000 living.
New York	„	„	2·12	„	„
Philadelphia	„	„	4·21	„	„
Baltimore	„	„	4·22	„	„
New Orleans	„	„	14·3	„	„

In other words,

New Orleans	loses by fever	12 persons annually	for every 1 at Boston.
„	„	$6\frac{8}{10}$	for 1 at New York.
„	„	$3\frac{4}{10}$	for 1 at Philadelphia.
„	„	$3\frac{4}{10}$	for 1 at Baltimore.

It thus appears that the mortality from fever at New Orleans, instead of being small, is extremely large, greatly exceeding that of any other American town of which we possess the statistics.

It may be remarked that the above table of diseases shows the remarkable fact of the immunity of the coloured races to the fevers which prove so fatal to the white races. Thus, while 766 white persons were cut off by yellow fever, only 3 coloured persons died from that disease during 1849.

This fact of itself proves, that when we speak of the geographical distribution of disease, or of the comparative healthiness of a district, we must always do so with a special regard to the race of men inhabiting the locality. In so far as the coloured races are concerned, New Orleans is a very healthy town, free from yellow fever, diarrhœa, dysentery, and liver disease, and not more ravaged by consumption or other pulmonary diseases than the most favoured towns of the American Union. But with regard to the white population, it is preeminently unhealthy, and ravaged by all these diseases.

It might naturally be expected that in a town where the epidemic and endemic mortality was so high, the deaths from all other diseases would fall below the average of more healthy towns,—in other words, it might be expected that the fatal epidemics would swallow up the deaths which would have occurred from other diseases. This appears to have been the conclusion at which the New Orleans Board of Health arrived from a comparison of the deaths from diseases of the respiratory organs and from consumption, with the mortality from all diseases. From using these false data, they very innocently arrived at the conclusion that New Orleans was peculiarly exempt from consumption and from diseases of the respiratory organs, and that they "were more favoured in these respects than any large city in this hemisphere."

The deaths in New Orleans from diseases of the respiratory organs, amounted in 1849 to 871, being in the proportion of 8·26 out of every 1000 living. The following are the proportions in which lung diseases prove fatal in some of the American towns, than which the New Orleans Board of Health boast they are so much more highly favoured.

Boston	loses by lung disease	4.99	annually in	every	1000	living.
Philadelphia,	„	5 47	„	„	1000	„
Baltimore, „	„	5·84	„	„	1000	„
New York,	„	6 34	„	„	1000	„
New Orleans,	„	8·26	„	„	1000	„

As to consumption, the very same holds good. 592 died at New Orleans from consumption in 1849, giving a proportion of 5·61 deaths from consumption in every 1000 living. The proportional deaths from the same disease, in a few of the other American towns, stands thus,—

Boston	loses by consumption	4·03	in every	1000	living.
Baltimore, „	„	4.12		1000	„
Philadelphia,	„	4·20		1000	„
New York,	„	4·96		1000	„
New Orleans,	„	5 61		1000	„

Thus we see that an unhealthy town not only exhibits a much greater mortality, in regard to the whole class of epidemic and endemic diseases, but also with regard to every disease to which the human frame is liable; and notably so with regard to diseases of the organs of respiration.

Let us now shortly compare the mortality of a few of the diseases among the white and coloured races, for the purpose of exhibiting the comparative liability of each race to certain diseases, or classes of disease.

Of the whole class of zymotic (epidemic, endemic, and contagious) diseases, the mortality among the whites amounted to 4737; and among the coloured races to 794; being in the proportion of one death from zymotic disease out of every 14·7 white persons, but only one death out of every 45·1 coloured persons.

This excessive liability to death, from the class of zymotic diseases, among the white races at New Orleans, extends to all the specific diseases of that class, with the single exception of small-pox. Small-pox cut off only one person during the year, out of every 890 whites; but one out of every 650 coloured persons during the same period.

Yellow fever cut off in the proportion of one out of every 90 whites; but only one out of every 11,936 coloured persons.

Typhus fever cut off one out of every 437 whites; but only one out of every 7162 coloured persons.

Cholera cut off one out of every 26 of the white races; but only one out of every 64 of the coloured race.

Diarrhœa cut off one out of every 312 white persons; but only one out of every 1705 coloured persons.

Dysentery proved fatal to one out of every 239 of the white inhabitants; but to one only out of every 1023 of the coloured inhabitants.

The mortality from diseases of the brain and nervous system amounted to 827 among the whites, and to 284 among the coloured races; giving a proportion of one death in every 84 whites, but only one death out of every 126 coloured persons.

The mortality from diseases of the organs of respiration, amounted to 642 among the white races, and to 229 among the coloured; giving a proportion of one death from chest diseases out of every 108 white persons living, but only one out of every 156 coloured persons. Of this class of diseases, consumption proved fatal to 445 white persons, but to only 147 coloured; giving a proportion of one death from consumption, during the year, out of every 156 white persons, but only one death from that disease out of every 243 coloured persons. In other words, consumption proved as fatal to the white inhabitants of New Orleans, as the whole class of diseases of the respiratory organs proved to the coloured races.

Diseases of the organs of digestion (not including the epidemics) proved fatal to 504 whites, and 143 coloured persons;

giving a proportion of one death by such diseases out of every 138 whites, but only one out of every 250 coloured persons.

We shall now turn to the monthly returns of the deaths in New Orleans, to ascertain what influence season exerts on the mortality of the white and coloured population.

Table showing the Monthly Mortality of Whites and Coloured during the year 1849 (*excluding cholera and the still-born*).

	WHITES.			COLOURED.		
	Male.	Fem.	Total.	Male.	Fem.	Total.
January,	225	126	351	68	63	131
February,	189	85	274	39	32	71
March,	304	152	456	49	63	112
April,	240	159	399	72	75	147
May,	238	112	350	69	49	118
June,	240	158	398	59	62	121
July,	201	89	290	52	45	97
August,	238	122	360	47	60	107
September,	524	141	665	36	36	72
October,	601	171	773	41	48	89
November,	336	115	451	78	46	124
December,	240	141	381	59	47	106

By this table we perceive that the influence of season on the mortality is most marked; but that the effect is very different on the white and coloured races. Generally speaking, the months most fatal to the white population are the very months in which the mortality among the coloured races is lowest. It is, however, interesting to remark, that that month which is most favourable to the health of the white is also the month which is most healthful to the coloured race,—viz. the month of February.

In so far as the white race is concerned, the most unhealthy and fatal months are September, October, and November, those months in which there is the greatest accumulation of heat, moisture, and miasmàtic exhalations. February, the healthiest month to the white, is also the coolest month of the year, and exhibits the greatest range of temperature. A remarkable exception to the general rule of the hottest month being the most unhealthy occurs in July. This to the white is the second most healthy month of the year, and the circumstance is easily accounted for. At New Orleans July is the most rainy month of the year; the rain descends in perfect torrents, and sweeps every thing before it, purifying the atmosphere, dissolving and carrying off the miasmatic exhalations, and sweeping the streets and open drains clear of all corrupting matters. This effect of heavy falls of rain has been remarked in every climate, and has frequently been brought under the public notice in the Mortality Reports of London and of Edinburgh. The cause is therefore quite capable of producing the effect.

In consequence of the clearing of the atmosphere, &c. in July, aided also by occasional heavy falls of rain in August, the mortality among the whites in August also continues low. But towards the end of August yellow fever begins to break out, and the mortality suddenly rises during September to double the number of deaths in August; attains its acmé in October; and only slowly subsides with the retirement of the sun to the southern hemisphere.

This marked influence of season is not observed among the coloured races. With them April is the most fatal month, though it is difficult to ascribe this to any special cause. Then follows January, November, and June. The least fatal month to the coloured population at New Orleans is February; then September, October, and July.

The next table is drawn up for the purpose of showing the influence of season on a few of the most fatal and prevalent diseases in New Orleans, distinguishing the white and coloured races.

Table of the Monthly Progress of certain Diseases among White and Coloured Persons.

	Cholera.		Yellow Fev.		Diarrhœa.		Dysentery.		Consumpt.	
	White.	Col.	White.	Col.	White.	Col.	White.	Col.	White.	Col.
January	535	93	—	—	13	3	26	2	43	11
February	173	49	—	—	15	—	10	1	50	10
March	673	140	—	—	23	—	34	6	34	18
April	326	79	—	—	19	3	34	4	34	13
May	426	81	—	—	12	4	21	3	34	13
June	260	63	—	—	12	1	37	3	26	10
July	25	6	1	—	19	1	17	4	29	18
August	7	0	17	—	9	1	20	3	40	15
September	3	0	214	—	25	2	18	2	27	11
October	7	1	415	1	19	3	30	1	39	13
November	85	22	111	1	25	2	22	3	40	6
December	103	19	8	1	32	1	21	4	49	11

From this table it appears that the influence of season on some diseases is most marked, while on others it is less apparent. In northern regions it has been remarked that the ravages of cholera are arrested by the severity of winter. At New Orleans we find that, like plague, its ravages are arrested by the extreme heats of summer. The very cause, however, which stopped the progress of one disease, loosened the reins of another;

so that, no sooner did cholera begin to abate, than its place was supplied by yellow fever,—a disease which solely rages while the accumulated heat is greatest, and the miasmatic exhalations are most abundant in the atmosphere.

This table exhibits, in a very striking manner, the marvellous exemption of the coloured races to the influence of those causes which give rise to yellow fever. Thus, while 766 cases of yellow fever prove fatal to the white population, only 3 prove fatal to the coloured races. The coloured races at New Orleans seem to have a somewhat similar exemption from diarrhœa and dysentery; and even with regard to consumption, it is not a little interesting to observe how much smaller is the proportion of the coloured population cut off by that disease.

The above table does not indicate that season has much influence at New Orleans on the mortality from diarrhœa and dysentery; but the observations would require to be extended over a greater series of years, before any general conclusions could be drawn from them.

ART. VII.—*A Case of Cæsarean Operation, accompanied with Pathological Remarks on Puerperal Metritis, or Acute Inflammation of the Uterus.* By JAMES MILMAN COLEY, M.D., Member of the Royal Colleges of Physicians and Surgeons in London, &c.

THE section of the abdominal parietes is one of the most important operations in surgery, and, when performed for the removal of extensive or malignant disease, full of danger. It fortunately happens that under the latter circumstances no imperious nor immediate necessity can exist for so perilous a proceeding, even to prolong for the shortest period a miserable existence. When, however, utero-gestation is permitted to advance so far as to render parturition impossible in women, whose pelves are distorted to a certain extent, and when the contraction of the passage is so extreme as to render the operation of embryotomy impracticable, the only alternative left is the Cæsarean section. There are other conditions under which an abdominal and uterine opening is justifiable: as when the mother is dead and the fœtus alive, or when, whether the child be dead or alive, the mother is, from the unusual continuance of exhausting and ineffectual labour, rapidly sinking with collapse, and the operation in question presents the only chance of saving her life. With respect to the preventive measure, to which allusion has been made, namely, the induction of premature labour, experience has shown not only the safety but the certain success of such a proceeding. The object being to excite the expulsive efforts of the uterus, while the fœtus is so small as to pass or be brought away by art through the natural passage, the period at which it should be adopted may be determined by the degree of pelvic contraction. The membranes of the ovum may be ruptured for this purpose at any time from the beginning of the sixth to the end of the seventh month, and the expulsion of the fœtus will commence some time within sixty hours. By this simple practice I have repeatedly obviated difficult and dangerous parturition in rickety subjects, and am of opinion that so safe and eligible a process cannot be too generally made known.

The utmost degree of distortion in the bones of the pelvis, considered by Stein and Plenk as admitting of embryotomy, is two French inches, which measure two inches and one-eighth English. Through such a space they consider it scarcely possible to deliver by perforation ; and they infer that the Cæsarean operation is indispensable when the conjugate diameter is 1½ French or 1¾ English inches. Dr Ramsbotham, one of the best English obstetrical writers, in speaking on this subject says,—

"I am quite convinced that unless there be at the brim one inch and three-eighths in the conjugate by three and a half in the iliac, it would be useless to attempt delivery *per vias naturales*."*

Cases must occasionally occur, which will require the utmost experience and consideration, each possessing some peculiarity arising from the constitution of the patient, the duration of the labour, the presence of some ascertained organic disease, or the fear of impending death. Under these various circumstances the practitioner in attendance will be expected to exercise nice discrimination, and sometimes a prompt judgment and proceeding.

As it is my object to confine my attention to those cases of distorted pelvis, which, like the case that I am about to relate, will not admit of any artificial assistance except the Cæsarean operation, or that of embryotomy, I will endeavour to point out the advantages of each, and the circumstances under which the one will be preferable to the other. Bearing in mind that the smallest conjugate diameter, through which it is said to be possible to extract a fœtus by perforating the cranium, is one inch and three-eighths, it is obvious that it would be bad practice to exhaust the patient, and expose the soft parts to laceration, by abortive attempts to extract the fœtus by the natural passage, where the diameter is less. When, therefore, the diameter of the pelvis is found by admeasurement to be so far reduced as I have stated, it is my opinion that the Cæsarean operation should be decided upon, and practised as early as possible, to afford the child and mother the best chance of life. So, also, when an alarming collapse, produced by the ineffectual efforts of the uterus, continued day after day, and night after night, comes on, the same proceedings should be adopted without delay, whenever the diameter of the pelvis is such as will not admit of the successful application of the forceps.

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* Principles and Practice of Obstetric Medicine, &c., p. 41.

The operation of opening the head, and extracting the crushed and lacerated fœtus, requiring for its safe execution two or three hours, according to the degree of contraction, and the strength of the patient, would be positively inadmissible; and it would be a neglect of duty to allow the patient to die undelivered, or during a barbarous and hopeless operation. So, when the diameter from the sacrum to the pubes does not exceed two inches, and, of course, does not admit the use of any, except the craniotomy forceps, and the fœtus is dead, the proper practice will be to perforate the head, break up the fœtus, and bring it away, *provided the mother is found in a state to bear the operation.* The state of the *os uteri*, and the period of the labour at which this method is adopted, are important considerations. When the *os uteri* is sufficiently dilated, and the strength of the patient remains unimpaired, the fœtus being dead, embryulcia should be speedily adopted, and may, with care, be safely completed. The death of the fœtus may be ascertained. It may be suspected by a dark, offensive discharge, and proved by the application of the stethoscope.

Should, however, the fœtus be known to be alive, after the conjugate diameter has been found, on examination and admeasurement, to be only two inches, the Cæsarean operation may be proposed, and, if consented to, performed with every prospect of success, provided the strength of the patient has not been exhausted. When, on the other hand, the practitioner is consulted after the patient has been worn out, perhaps a week or more, with pain and loss of rest when the pulse is at 126, the abdomen tender, the skin in a state of collapse, and speedy dissolution is apprehended, whether the fœtus be dead or alive, the Cæsarean section is the *only possible means* of prolonging or saving the life of the mother: for in such a case embryotomy cannot be completed without the inevitable sacrifice of the patient's life.

In this country it would be impossible to obtain a fair estimate of the comparative safety of these two operations: the Cæsarean having been almost invariably postponed as a last resource, when uterine or peritoneal inflammation has commenced or made some progress, or the patient has been brought into a state of irrecoverable collapse. Hence the fatality of the latter in England, where the operation has now been performed about thirty-four times, and only three women have survived; while on the continent, where abdominal section is proposed and practised at an early stage of the labour, and while the patient is vigorous, and inflammation absent, about one half of the patients have recovered. The most unfavourable results formerly followed the operation for hernia, from the same cause; but since this fatality has been found to proceed from the use of the knife being delayed till peritoneal inflammation has commenced, and since the rule of operating early has been adopted, the fatal results have been much less frequent.

Independently of the time required for the safe performance of embryotomy, every experienced surgeon must confess that it is attended with great risk of laceration ; and all who have used the craniotomy-forceps, which have been recommended for cases of distorted pelvis, admit this danger of the soft parts to be greatly increased by them. In short, all my surgical friends, who have attempted their use in so confined a passage, agree with me in considering them very dangerous instruments, and I perfectly concur with Dr Ramsbotham in his remarks on that subject.

When we add to this the immense number of deaths from craniotomy, and from laceration of the soft parts, which never reach the public ear, I think we shall be inclined to agree that the Cæsarean section, performed in due time, is scarcely, if at all, more fatal, and certainly less painful to the patient.

The progress of labours connected with distorted pelvis is calculated to mislead the inexperienced. The pains are tedious and appear long unavailing, and, the presenting part being unable to pass through the brim of the pelvis, the effects of the uterus are not so apparent as real. Hence the long continued contractions of the uterus at length produce a congested state of the vessels, first in the fibrous, and afterwards in the peritoneal coat; and if ergot of rye is administered in such cases, fatal inflammation is the result. In brute animals which have died during the progress of parturition, where a comparative disproportion in the pelvis has resisted the passage of the uterine contents, I have repeatedly found on dissection the fibrous and serous coats of the uterus in a state of mortification from this cause. In the human subject this congested state of the middle coat of the uterus proceeds to inflammation without much pain, which is chiefly felt in the hypogastric region, and is accompanied with heat in the neck of the bladder. The cause of this congestion is the violent contraction of the uterus, after the *liquor amnii* has escaped, while the head of the fœtus is resting on the pelvis, and the latter resisting the forcible efforts of the uterus; whereby the veins are obstructed, and the return of the blood conveyed by the uterine branches of the hypogastric arteries, prevented. The circulation being thus interrupted, the same phenomena occur as in inflammation from cold or other cause. The parts become swollen and hard, and the capillary vessels giving way, the stagnant blood-globules undergo a gradual change, and are converted into pus-globules.

So long as this morbid process is confined to the fibrous structure, its usual abode, the only obvious proofs of its existence during labour are extreme exhaustion, intense thirst, and an uninterrupted hurry in the circulation, the pulse in such cases varying from 120 to 140. Neither in this nor in the subacute or rheumatic inflammation of the fibrous coat of the uterus, have I ever observed the tongue to be furred, or the functions of the sensorium disordered. On the contrary, as soon as inflammation appears in the serous tunic, violent pain, tension, and tenderness commence, accompanied with a furred tongue and delirium. Now, admitting the hurtful consequence of allowing the powerful contraction of the uterus round the body of the fœtus to continue, until inflammation of the fibrous coat is established, I would ask any intelligent practitioner, whether he should not consider the division of the uterus a more safe and appropriate operation than the rough, tedious, and painful proceeding of dragging away the fœtus by the force of instruments?—a proceeding which cannot be adopted without bruising the inflamed uterus and endangering the swollen parts below.

It may be said by those who are inexperienced in the higher pursuits of the profession, that a wound inflicted on an inflamed structure may produce gangrene, and therefore should not be made. There is no doubt that, as far as the wound extends, gangrene will be liable to follow; but the knife is not to be withheld on that account; otherwise we should leave our patients to die every day with phlegmonous erysipelas, in which disease a similar condition prevails as far as the circulation of the adipose and cellular membranes are concerned, and in which the immediate relief afforded to the vascular turgescence by bold and extensive incisions, and the consequent rescue of the patient from certain and impending death, amply overbalance the temporary and partial destruction of the edges of the wounded part. Perhaps, on account of the larger arteries passing along the sides of the uterus, it is fortunate that the commencement and principal seat of puerperal metritis is in front and near the cervix, whence it acquires in these cases an astonishing thickness and solidity, imparting, on division with the knife, before softening or abscess commences, a brawny appearance. In the case which I am about to relate, the fibrous coat at the incised part exceeded one inch, which may have been in some degree augmented by the attachment of the placenta at that part; the uterus, I believe, being always comparatively more vascular and turgid where the placenta is in contact with it, for the purpose, probably, of contributing to the support of the fœtal circulation. An incision, therefore, through the most turgid and diseased part, by unloading the uterine veins and retarding the inflammatory process, can be no objection to the Cæsarean operation, except that of prolonging the cure, when recovery happens, by keeping up a discharge through the lower part of the wound. This inconvenience, however, may be entirely avoided in those cases admitting of the operation at an early period, as union by the first intention would take place throughout the integuments and in the uterus, at least as far as the mucous membrane is concerned. The morbid alterations of structure in the fibrous coat of the uterus, which I have been describing, are such as are found in fatal cases of low, puerperal fever, following difficult and tedious labours, especially in those whose natural stamina are feeble or morbific, and who are exposed to such remote causes as debilitate the constitution; such as malaria and residence in confined, dark, and ill-ventilated apartments; and, therefore, every means which science can suggest should be used to obviate so fatal a disease.

Having unfolded my general views on the pathology of puerperal metritis, and of those peculiar cases of parturition which are rendered difficult by the contracted state of the pelvis, and having endeavoured to dissipate prejudice on the subject of the Cæsarean section, and to draw the attention of the profession to the comparative merits of that operation, and of embryotomy, I think it proper to add that, in some parts of the continent, the heads of the theological schools and colleges have decided that any physician or surgeon in attendance, who is of course the only proper judge on such a subject, when he considers the Cæsarean operation necessary, and refuses to recommend and perform it, ought to be reprimanded by the *magistracy*, and considered guilty of a deadly sin. In Sicily no person is admitted to practise as a surgeon, until he has been carefully examined as to his ability to perform this operation on the living mother.* I may add that the danger of the Cæsarean abdominal sections does not depend so much on their extent as on the period of labour at which they are performed. When the temperature of the apartment is raised nearly to that of the blood, the patient in sound health, and the operator firm, active, abounding in resources, and familiar with anatomy, there is no danger in making incisions in any part of the *linea alba*, from the ensiform cartilage to the pubes. Here, however, the incision is seldom required to commence higher than the umbilicus, and the exposure or displacement of the intestines need not excite any apprehension, so long as a temperature of 90 or 100 degrees is artificially supported.

The most humane surgeons, therefore, are those who propose and perform operations at the earliest period, in all cases where it is desirable to avoid inflammation in the serous membranes; and in this opinion I am supported by the highest surgical authorities. In advocating the practice of performing the Cæsarean section as early as possible, I must not be understood to mean before the commencement of labour, as the disposition in the uterus to contract during parturition will powerfully aid us in our operations, and contribute to the safety of the patient.

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* Cangiamila Embryologia sacra, passim. Raynaud de ortu Infantiscontra Naturam. Peu Pratique des Accouchments, &c. &c.

I now proceed to relate the case and operation, which are the objects of this communication.

Case.

On the 21st February 1845, I was earnestly requested by Richard Instan to see his wife, aged 40, and give my opinion on her case. She was at the full period of utero-gestation. She informed me that Mr N. had been engaged to attend her two months before, and that she had been in labour under his care a week, which statement was confirmed by the women in attendance. I found she had been three days and nights in bed, from which she was unable to rise, suffering with retention of urine, the distended bladder having been forced into the right iliac region, and perceptible through the integuments. She was rickety and so deformed in the pelvis, that I was told she could not walk erect; and when she lay in bed she required a pillow to fill up a large hollow in the back occasioned by the projection of the lumbar vertebræ inwards towards the pubes. I was also informed that on the 20th some medicine had been given her, which excited continual pain and exhaustion.

The patient was very weak, and the pulse was about 100. She had had no sleep from the commencement of labour. The soft parts were so swollen that I could with difficulty examine the conjugate diameter of the pelvis, which appeared to me not to exceed one and a half inch by the vaginal examination and admeasurement by the fingers.* I stated it as my opinion that it was a case of difficulty, and required artificial assistance and great skill. The uterine action had not returned regularly after the violent pain had subsided. The *os uteri* was fully dilated. The membranes had been ruptured, and there was a dark-coloured discharge.

As she was Mr N.'s patient, and I had only been requested to give my opinion, I advised the introduction of the catheter to prevent rupture of the bladder, and I left the case in Mr N.'s hands, in compliance with the wishes of the husband of the patient, who was a tenant of Mrs N.'s. In the evening her husband entreated me to see the patient again, and save her life, if possible, informing me that Mr N. did not use the catheter, and declined to attend the woman any more. I immediately visited the patient. I found the discharge more offensive, and I had no doubt that the fœtus was dead. The pulse was more feeble and frequent, beating 126, and being sometimes scarcely perceptible. The uterine pains were less frequent. Finding she had been kept on very low diet, and was now too much reduced in strength to undergo the operation of embryotomy, to which I had referred in the morning, I directed her to take nourishing diet, and to be kept quiet, hoping I might find her somewhat refreshed in the morning.

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* The conjugate diameter was found by admeasurement on the fourth day after death, even when the soft parts were in a state of decomposition, not to exceed two inches.

22*d.* So great was her exhaustion this morning, after another sleepless night, that the least movement in bed produced a corresponding fluttering of the pulse, rapid respiration, and sudden collapse of the vessels of the skin. I was aware that these symptoms, together with those obtained by immediate auscultation, indicated hydro-pericardium, or the presence of water in the bag of the heart; and that the contracted state of the pelvis from the very commencement of labour, admitted only of two modes of delivery, namely, Embryotomy, or the Cæsarean operation. To have commenced under these circumstances the tedious, painful, and dangerous operation of perforating and extracting piece by piece a full grown fœtus, through so distorted a pelvis, would now have been unfeeling and barbarous; as the patient was utterly incapable of bearing the pain, and would have died before the operation could have been completed. I therefore again desired that she may be kept at perfect rest, and have such nourishment as she could take. At this time the liquor amnii had entirely escaped, and the uterus had contracted firmly round the fœtus, and tympany existed to a great extent. She complained of intense thirst.

In the evening I saw her again, and having watched her with anxiety, hoping to witness some interval of relief from this alarming state of collapse, and apprehending that she would sink exhausted, and die undelivered, I was satisfied that further delay would be fatal, and that some immediate steps must be taken. The pulse wast hen 138, intermitting, sometimes rising a little, sometimes lost; the breathing hurried, but without any crepitous rattle, indicating pulmonary congestion; the heart fluttering with obscure tumultuous struggles; the skin in a state of universal collapse; the mind was clear, for she had no delirium. In this extremity, having well weighed the matter in my mind, I was satisfied that no alternative was left, which could hold out the smallest chance of saving her life, but the Cæsarean operation. On this being proposed, the patient and her friends instantly agreed to it, and having without delay raised the temperature of the room, a miserable lodging, to 90 healthiness of a district, we must always do so with a special regard to the race of men inhabiting the locality. In so far as the coloured races are concerned, New Orleans is a very healthy town, free from yellow fever, diarrhœa, dysentery, and liver disease, and not more ravaged by consumption or other pulmonary diseases than the most favoured towns of the American Union. But with regard to the white population, it is pre-eminently unhealthy, and ravaged by all these diseases.

It might naturally be expected that in a town where the epidemic and endemic mortality was so high, the deaths from all other diseases would fall below the average of more healthy towns,—in other words, it might be expected that the fatal epidemics would swallow up the deaths which would have occurred from other diseases. This appears to have been the conclusion at which the New Orleans Board of Health arrived from a comparison of the deaths from diseases of the respiratory organs and from consumption, with the mortality from all diseases. From using these false data, they very innocently arrived at the conclusion that New Orleans was peculiarly exempt from consumption and from diseases of the respiratory organs, and that they "were more favoured in these respects than any large city in this hemisphere."

The deaths in New Orleans from diseases of the respiratory organs, amounted in 1849 to 871, being in the proportion of 8·26 out of every 1000 living. The following are the proportions in which lung diseases prove fatal in some of the American towns, than which the New Orleans Board of Health boast they are so much more highly favoured.

Boston	loses by lung disease	4.99	annually in	every	1000	living.
Philadelphia,	„	5·47	„	„	1000	„
Baltimore, „	„	5·84	„	„	1000	„
New York,	„	6·34	„	„	1000	„
New Orleans,	„	8·26	„	„	1000	„

As to consumption, the very same holds good. 592 died at New Orleans from consumption in 1849, giving a proportion of 5·61 deaths from consumption in every 1000 living. The proportional deaths from the same disease, in a few of the other American towns, stands thus,—

Boston	loses by consumption	4·03	in every	1000	living.
Baltimore,	„ „	4.12		1000	„
Philadelphia,	„	4·20		1000	„
New York,	„	4·96		1000	„
New Orleans,	„	5 61		1000	„

Thus we see that an unhealthy town not only exhibits a much greater mortality, in regard to the whole class of epidemic and endemic diseases, but also with regard to every disease to which the human frame is liable; and notably so with regard to diseases of the organs of respiration.

Let us now shortly compare the mortality of a few of the diseases among the white and coloured races, for the purpose of exhibiting the comparative liability of each race to certain diseases, or classes of disease.

Of the whole class of zymotic (epidemic, endemic, and contagious) diseases, the mortality among the whites amounted to 4737; and among the coloured races to 794; being in the proportion of one death from zymotic disease out of every 14·7 white persons, but only one death out of every 45·1 coloured persons.

This excessive liability to death, from the class of zymotic diseases, among the white races at New Orleans, extends to all the specific diseases of that class, with the single exception of small-pox. Small-pox cut off only one person during the year, out of every 890 whites; but one out of every 650 coloured persons during the same period.

Yellow fever cut off in the proportion of one out of every 90 whites; but only one out of every 11,936 coloured persons.

Typhus fever cut off one out of every 437 whites; but only one out of every 7162 coloured persons.

Cholera cut off one out of every 26 of the white races; but only one out of every 64 of the coloured race.

Diarrhœa cut off one out of every 312 white persons; but only one out of every 1705 coloured persons.

Dysentery proved fatal to one out of every 239 of the white inhabitants; but to one only out of every 1023 of the coloured inhabitants.

The mortality from diseases of the brain and nervous system amounted to 827 among the whites, and to 284 among the coloured races; giving a proportion of one death in every 84 whites, but only one death out of every 126 coloured persons.

The mortality from diseases of the organs of respiration, amounted to 642 among the white races, and to 229 among the coloured; giving a proportion of one death from chest diseases out of every 108 white persons living, but only one out of every 156 coloured persons. Of this class of diseases, consumption proved fatal to 445 white persons, but to only 147 coloured; giving a proportion of one death from consumption, during the year, out of every 156 white persons, but only one death from that disease out of every 243 coloured persons. In other words, consumption proved as fatal to the white inhabitants of New Orleans, as the whole class of diseases of the respiratory organs proved to the coloured races.

Diseases of the organs of digestion (not including the epidemics) proved fatal to 504 whites, and 143 coloured persons;

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respectable inhabitants of the town, who were most anxious for her recovery.

After the fatal termination of the case, a few young medical men solicited the coroner to summon twelve tradesmen to hold an inquest on a midwifery subject, which they could not understand; notwithstanding he had been informed by me and two surgeons of the cause of death; and a young demonstrator of anatomy, who had never performed nor seen a Cæsarean operation, was invited to give an opinion on the subject on the fourth day after the death of the patient, and after the dead body had been three times opened and examined without seeing me, or making any inquiry from me of the circumstances of the case or the necessity of the operation. To show the absurdity of expecting tradesmen, however respectable, to comprehend and form an opinion on a midwifery-subject, which none but the most experienced medical practitioners understand, it may be mentioned that the foreman of the jury was obliged to inquire what was meant by the word *pelvis.*

How long the pulmonary disease may have existed is uncertain. Admitting its presence previously to the commencement of labour, it will not appear surprising that it should have increased during the hurried circulation induced by that process. On the other hand, fatal hepatization of the lungs is found sometimes to be produced in a few days, as happened to a gentleman, whom I saw in the latter stage of the disease, and who died on the fourth day of the attack. On examining the body after death, I discovered nearly the whole of the right lung to be hepatized. Whether the diseased state of the lungs in Instan's wife was primary or secondary, it is obvious that the oppressed state of the pulmonary circulation, and the imperfect decarbonization of the blood, must have lowered the vital powers, interfered with the healing process in the uterus, and induced the gangrenous appearance on the edges of the wound.

It is much to be regretted that ignorance or neglect should ever expose women, with distorted pelves, to the shocking alternative of undergoing the operation of embryulcia, or the Cæsarean section, *as the one is quite as dangerous as the other* (although the latter is far less painful), when the patient has been worn out by a tedious labour; and however the practice of some medical men, or the opinions of the public, may reconcile either to the use of the perforator, I am convinced, from an experience of nearly forty years, *that very few cases can occur in which such a dangerous proceeding ought to be adopted.* I have repeatedly employed the forceps or vectis, and thereby saved the life of the child, as well as the mother, when I have been called in to use the perforator, in consequence of the practitioner in attendance believing that the fœtus was dead, and could not be brought away, dead or alive, except by the barbarous operation of perforating the skull, and

ing matters. This effect of
d in every climate, and has
ublic notice in the Mortality
gh. The cause is therefore
ct.

f the atmosphere, &c. in July,
ls of rain in August, the mor-
ust also continues low. But
fever begins to break out, and
ring September to double the
ins its acmé in October; and
retirement of the sun to the

ason is not observed among the
April is the most fatal month,
ns to any special cause. Then
June. The least fatal month
New Orleans is February; then

the purpose of showing the in-
he most fatal and prevalent dis-
guishing the white and coloured

ss of certain Diseases among White
ured Persons.

	ow Fev.		Diarrhœa.		Dysentery.		Consumpt.	
	ite.	Col.	White.	Col.	White.	Col.	White.	Col.
	—	—	13	3	26	2	43	11
	—	—	15	—	10	1	50	10
[illegible]	—	—	23	—	34	6	34	18
[illegible]	—	—	19	3	34	4	34	13
[illegible]	—	—	12	4	21	3	34	13
[illegible]	—	—	12	1	37	3	26	10
[illegible]	1	—	19	1	17	4	29	18
[illegible]	17	—	9	1	20	3	40	15
0	214	—	25	2	18	2	27	11
1	415	1	19	3	30	1	39	13
22	111	1	25	2	22	3	40	6
[illegible]	8	1	32	1	21	4	49	11

table it appears that the influence of season on
is most marked, while on others it is less appa-
thern regions it has been remarked that the rava-
era are arrested by the severity of winter. At New
we find that, like plague, its ravages are arrested by
reme heats of summer. The very cause, however, which
ed the progress of one disease, loosened the reins of another;

elapse after the publication of the microscopical observations, which took place in 1846, and the account of the chemical constitution of the urine, which was given in 1848, without the expected history of the case appearing, that it seemed desirable no longer to delay placing before the readers of this Journal as much as was known of a case not only of novelty, but of great instruction. This was accordingly done in last volume. Since that time the history of the case by Dr Macintyre himself has appeared in the last published volume of the Medico-Chirurgical Transactions; and the account of that gentleman is now introduced here, in order to render the history of the case complete.]

Case of MOLLITIES *and* FRAGILITAS OSSIUM, *accompanied with Urine strongly charged with Animal Matter.* By WILLIAM MACINTYRE, M.D.

Mr M ———, a highly respectable tradesman, aged 45, placed himself under my care on the 30th of October, 1845. He was then confined to the house by excruciating pains of the chest, back, and loins, from which he had been suffering, more or less, for upwards of twelve months. On taking charge of the case, and on several occasions subsequently, I had the advantage of meeting Dr Watson, whom the patient had consulted at the beginning of the preceding summer, and once or twice more recently.

Mr M. was now much emaciated. His face was thin and sallow; his aspect expressive of suffering, though, when not actually under the influence of pain, he maintained his natural composure and habitual cheerfulness. The heat of the surface was below the natural standard, the pulse 86, and deficient in strength; the tongue furred; the appetite keen, often voracious, but the thirst not inordinate. The bowels were stated to be generally sluggish, but easily excited to diarrhœa, and the urine was reported to be natural in appearance and quantity.

For some days previous to our visit, the pain, which had usually occupied the trunk generally, became fixed in the left lumbar and iliac regions, obliging the patient to observe a semi-bent posture, on account of the agony caused by every attempt at movement of the body upon the thighs. Pressure along the course of the spine did not create much uneasiness; but when made at the brim of the pelvis in front, on either side, where the iliacus and psoas muscles pass out to their insertion, the most exquisite tenderness was experienced. There was some painful retraction of the testicle, but no redness or swelling observed either in the groins or track of the cord. Irregular wandering pains about the chest and shoulders were complained of, but these were now reckoned comparatively trifling, as they had, at an early period of the illness, been extremely severe. The extremities, upper and lower, though much wasted, were free from pain, and could be exercised without difficulty or discomfort, provided their movements did not involve those of the trunk.

The abdomen was tumid from intestinal flatus, and the liver was judged to be of augmented volume; but in no part of this cavity could any tumour or special enlargement be detected.

The chest presented the emaciated appearance observable in the rest of the body, with some flattening superiorly in front, on both sides. The breathing was unembarrassed, and, beyond some amount of mucous rhonchi, the stethoscope gave no note of pulmonary lesion. Percussion elicited a clear sound everywhere, except in the precordial space, which was dull over a larger extent than natural, and the cardiac impulse was stronger than it ordinarily is in health, but no abnormal sounds were audible either in the region of the heart or in the course of the great vessels. It was observed that percussion, when forcibly performed, caused pain; but the circumstance did not, at the time, attract much attention, it being not unusual for sensitive patients to flinch under the gentlest tap.

The only positive information gained by the examination of the thorax was, that the heart was not in a satisfactory state. The exploration of this region was undertaken with some interest, and conducted with care, in consequence of the patient ascribing his illness to a violent strain which he sustained fourteen months before, in vaulting out of an underground cavern. On coming to the ground, he instantly felt as if something had snapped or given way within the chest, and for some minutes he lay in intense agony, unable to stir. The violence of the pain having somewhat abated, he was able to walk to a neighbouring inn, and, after a night's repose, felt no inconvenience beyond some soreness and stiffness, which, however, he made light of, as he had for some time previously been subject to wandering pains at the breast and shoulders.

The accident just related occurred in September 1844, while he was in the country, whither he had gone for recreation and to recruit his strength, which had been impaired by close attention to business and much anxiety about a member of his family who had, a short time before, passed through a dangerous and protracted illness. Towards the end of the month, after his return to town, he consulted me respecting some dyspeptic symptoms, mentioning, incidentally, the hurt he had received, and his being still incommoded by pain and stiffness of the chest, chiefly felt when he raised or flung back his arms. There was at that time no external mark of injury, nor any cough or dyspnœa. He was so much relieved by the application of a strengthening plaster to the chest, and carefully abstaining from bodily exertion, that, after the lapse of ten days, he discontinued his visits to me, and resumed his ordinary avocations. It appears, however, that, about three weeks or a month afterwards, he was seized suddenly, and without any evident cause, with acute pain in the chest and difficulty of breathing, for which he applied to a surgeon, who found it necessary to take blood from the arm to the amount of a pound, and to apply leeches and blisters topically. The abstraction of blood, he said, abated the pain, but was followed by great weakness, from which he did not rally for two or three months. In the following spring he had another severe attack, which was considered to be pleuritic, and treated by cupping. The pain, which in this second attack was not in the chest, but in the right side, between the ribs and hip joint, was not materially mitigated by the treatment, while the prostration of strength that followed the loss of blood was much greater than on the former occasion, and went on progressively increasing, with wasting, loss of colour, and slight puffiness of the face and ankles.

In this state the patient consulted Dr Watson, who put him upon a course of steel and quinine. Under this treatment he improved rapidly; the pains became daily less severe, and by the middle of summer he had recovered so much that he was able to travel to Scotland. There, on the sea-coast, the improvement advanced, and for some time he was capable of taking active exercise on foot during the greater part of the day, bounding over the hills, to use his own expression, as nimbly as any of his companions. His appetite, which had at no time failed, became extremely keen, and he indulged it without restriction, particularly with the article of fish. This progress towards recovery was, however, suddenly checked by an attack of diarrhœa, which proved obstinate, and reduced his strength considerably. In September he returned to London, in a very debilitated state, but free from the excruciating pains which had tortured him during the spring and early part of the summer. He was again put by Dr Watson on a course of tonics, and seemed to be gradually improving, when he was seized, a few days before I saw him, with the lumbar and sciatic pains, under which we found him suffering so severely.

With the view of meeting the prominent and most urgent symptoms of the case, the warm bath was prescribed, with Dover's powder at bed-time, and the acetate of ammonia, camphor julep, and compound tincture of camphor every five or six hours.

As some amount of œdema had been observed at one period during the progress of the patient's illness, I procured a portion of his urine for examination. This specimen was opaque, acid, and of high density, the specific gravity being 1035°, but it gave no indication of the presence of sugar to Trômers or to Moore and Palmer's tests. Treated by heat to ebullition, but not under that point it was found to abound in animal matter, which, when isolated in this way, exhibited all the characters of albumen. With nitric acid, however, this urine displayed anomalies of a remarkable kind. On the addition of the acid no immediate precipitation took place; on the contrary, the urine, previously cloudy or turbid, became instantly clear, and retained its transparency for an hour or an hour and a half, when it was found to have formed into a firm yellow mass, which, unlike the coagulum resulting from the action of nitric acid upon *serum sanguinis* or ordinary albuminous urine, underwent complete solution on the application of heat, but again consolidated on cooling. Such were the effects when operating with the acid at the ordinary temperature of the atmosphere. When, however, the urine was previously heated to ebullition, and, while still fluid, allowed to cool down a few points, the coagulum was almost instantly obtained, and, like that resulting from the slow operation in the cold, suffered redissolution on the temperature being raised to the boiling point.

Oxalic acid threw down a copious white precipitate from the urine, and tannin and tincture of galls turned the whole into a tough mass.

The exertion of getting into the bath had been found productive of such acute suffering, that its use was discontinued; and as a slight catarrh, attended with some febrile movement, came on, tartrate of potash, with ipecacuanha, was substituted for the acetate of ammonia. The Dover's powder procured better nights, but during the day every motion of the trunk was attended with excruciating pain, great care and no little cautious manœuvring on the patient's part being required to enable him to get in and out of bed on all-fours. The urine became more abundant under the use of the neutral saline, and deposited a copious sediment of triple phosphates. It still reddened litmus paper, maintained its high specific gravity, and continued to exhibit the same behaviour towards heat and nitric acid.

On the 3d of November, Dr Prout joined Dr Watson and myself in consultation. The slight febrile attack just noticed had passed away, but the patient was weaker, and confined to bed from inability to keep the erect or sitting posture. There was much flatulence of the abdomen, and marked fulness and hardness in the region of the liver. The pains had quitted the left side, and now occupied the right hypochondre, and the right lumbar region. The urine was found, on this occasion, to exhibit chemical reactions precisely similar to those already described.

It was agreed to resume the citrate of iron and quinine, to continue the opiate, and to have recourse, from time to time, to vesicatories and counter-irritants.

On the 9th the urine presented an altered appearance, being turbid and thick, like pea-soup. The phosphates had given place to an enormous quantity of lithates, which, owing to the great density of the urine (1040°) remained for hours suspended. Coincident with this altered state of the urine, an improvement was observable in the condition of the patient, who had slept well for two nights, and was able to sit up and to walk about his room, feeling little of the racking pains which had formerly crippled him. The urine, however, contained the same amount of animal matter, and its peculiar properties continued unchanged, except that more prolonged ebullition was now required to reduce it to the solid state.

The improvement did not last long; on the 11th the patient reported a bad night from an oppression caused by phlegm in the chest, and consequent cough, which was followed by pain in the right hip and region of the kidney. He had also an attack of diarrhœa, brought on by a dose of rhubarb and soda given to correct flatulence. The urine was now more copious, less loaded with lithates, and reduced in density to 1034°. It bore brisk ebullition for several minutes without coagulating, but on being withdrawn from the flame of the lamp, coagulated instantly into a uniform mass resembling blanc-mange in colour and consistence. The coagulum did not, however, melt on the renewed application of heat, nor by boiling in water.

Dover's powder, with aromatic cretaceous mixture, and a blister over the kidney, were prescribed.

On the 13th, a better night was reported, undisturbed by cough or diarrhœa; but the patient, though easier, was weaker, and looked more anæmic. The urine had again become loaded with lithates, presenting the appearance of thick gruel; it was acid, very spumous and glutinous, and its specific gravity had risen to 1040°.

On the 15th, Dr Bence Jones, who had been for some time engaged in examining the composition of the patient's urine, met us in consultation. At his suggestion, alum was added to the tonics in use, with the view of checking the exhausting excretion of animal matter; and for several days a hope was entertained that this object might be realized. The urine was found to vary more in density than it had yet done, fluctuating between 1035° and 1026°, with a correspondent reduction in the amount of animal matter yielded to heat, but the reactions with nitric acid were exactly the same as before.

Under the diminished waste by the kidneys a temporary improvement took place; the pains were more tolerable, the patient was able to sit up daily for an hour or two, and continued to enjoy his food; but towards the end of November he again became weak and languid, and on the 7th of December he experienced a dreadful aggravation of lumbar pains. Crude opium and the preparations of morphia were severally tried, but they not only failed to procure sleep or relief, but disturbed his rest and confused his head. They were consequently discontinued. Some mitigation of suffering took place under the liberal use of Dover's powder with the guaiacum mixture, and the external application of the alcoholic tincture of aconite; but progressive weakness and emaciation went on with accelerated pace, and the patient, now almost constantly racked with pain, was unable to leave his bed; he lost his appetite, took scarcely any nourishment, and on the 1st of January died exhausted, in the full possession of his mental faculties, and evincing, in his supreme hour of suffering, the same admirable fortitude and patient endurance which he had displayed throughout the whole course of his trying illness.

On the 28th of December the specific gravity of the urine, which for several days had been permanently high, sometimes 1040°, was found to have fallen to 1022°, but on the two following days it had amounted to 1036 and 1038°; when of the comparatively low density just mentioned, it coagulated, under heat, into a loose diffluent mass, like custard.

INSPECTION.—The body was examined thirty-six hours after death, by Mr Shaw, in the presence of Dr Watson, Dr Bence Jones, Dr Ridge, and myself. The body had undergone no remarkable amount of decomposition, but presented great emaciation.

Thorax.—The upper region of the chest appeared somewhat flattened, and below the clavicles, sunken. The muscles on being exposed were observed to be flabby, of a grayish colour, and bloodless.

On dividing the cartilages at the usual place, it was found that the adjoining extremities of the osseous ribs crumbled under the heel of the scalpel; and on prosecuting the dissection it was discovered, that all the ribs, throughout their whole length, were soft and brittle, so that they could be easily cut by the knife, and readily broken, at any point, by the exertion of a very moderate force. They had evidently lost much in size and weight, as well as in consistence and tenacity; their outer encasement, or laminated portion, was very thin, loose and fragile, yielding and crackling when pressed between the fingers and the thumb; their interior was charged with a soft gelatiniform substance of a blood-red colour and unctuous feel. The sternum was in a similar state of softening and fragility, first bending, and then snapping across when raised and turned back; but its under surface presented a deeper and more extensive redness, and its cancellated structure was more loaded with the coloured matter. The appearance of this bone may be seen almost exactly pictured in Mr Solly's plate of the sternum of Sarah Newbury, whose case of MOLLITIES OSSIUM he has detailed in the "Transactions of the Society," the only difference being, that it did not present, to the same extent as Newbury's, the cell-like character.[*]

The lungs showed no serious lesion; here and there they were emphysematous, and partially adherent to the costal pleura by weak and slender membranous filaments; but they were quite free from tubercular and other deposit.

The pericardium was of healthy structure. It contained about two ounces of clear serum, and its capacity appeared large in proportion to the size of the heart, which was rather under the normal dimensions and firmly contracted. The left ventricle embraced a small coagulum; the right contained one somewhat larger and partly fibrinous. The valves at the outlets of the heart were very thin, but no other morbid appearance was observed in this organ, and the great vessels were sound.

Abdomen.—On opening this cavity, the stomach presented itself of great dimensions, occupying the whole of the epigastrium, both hypochondres, and half the umbilical region. Its walls were of natural thickness, and neither exteriorly nor interiorly was there any trace of inflammation; but some of the vessels ramifying on the surface were unusually large.

The liver was voluminous, but of healthy structure; the gall-bladder was full of bile; the pancreas and spleen were sound.

The right kidney was of normal volume and shape; its proper tunic was of the usual fine texture, and easily separated. The surface of the organ was smooth and of natural colour, without the slightest appearance of mottling. On section it was found to be somewhat congested, but in other respects perfectly healthy. Neither with the naked eye, nor with the aid of a glass, could the smallest trace of granular degeneration be detected, nor, indeed, the least deviation from the natural organization and arrangement of its several portions. The left kidney was rather larger than the right, but equally sound as its fellow. The urinary bladder was healthy.

The intestines were nearly empty, and presented no unusual appearance. The mesenteric glands were free from disease.

Spine.—After the thoracic, abdominal, and pelvic viscera were removed, the spine was examined. The three upper divisions of the column were found to have undergone, more or less, the same morbid change of structure which was discovered in the ribs and sternum. All presented the same characters of softness and brittleness, but the dorsal and lumbar had evidently suffered mos from morbid degeneration and interstitial absorption, their bodies scarcely equalling those of the cervical in thickness.

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[*] Medico-Chirurgical Transactions, Vol. xxvii. 1844.

With the lumbar vertebræ disappeared the characters of active disease and disorganization. The sacrum and flat bones of the pelvis were unyielding and impenetrable by the knife, but in colour they exhibited, it was thought, an unnaturally grey tint. Beyond this the examination was not prosecuted, as the cylindrical bones of the extremities were found to resist all efforts to bend or break them by manual force.

From the foregoing details it will be seen, that although this case was stamped with characters of the most striking and aggravated kind, its real nature remained unknown to the last. The affection to which it bore the nearest resemblance was a severe attack of lumbago or sciatica; but it was evident from more than one feature of the complaint, that sufferings so intense must have a deeper seat and more formidable cause than mere muscular or neuralgic rheumatism. In particular, it was ascertained, that the patient had lately lost strength and wasted rapidly, although his appetite continued keen, and he was consuming a much greater amount of solid animal food than he ever had been in the habit of taking when in perfect health.

The discovery of albuminous matter in the urine naturally suggested the existence of Bright's disease; but that supposition was abandoned, on a closer consideration of the character of the symptoms and the peculiar condition of the renal excretion. The leading symptoms were not such as usually accompany that affection. Excruciating pains, like those which assailed our patient, constitute no part of Bright's disease, while two of its most constant attendants, dropsy and cerebral disturbance, were absent. The presence in the urine of an animal principle alien to it in a normal state, might, it was at one time supposed, be attributable to erroneous vital chemistry, involving a perversion of the primary or secondary assimilating processes. This explanation was, however, deemed far from adequate; for, admitting the probability of these functions being in fault, the question as to what particular organ was affected, and what the special lesion that could give rise to a pathological condition so very anomalous, remained unanswered, and the case closed amid the uncertainty and doubt which had surrounded it from the beginning.

But the information denied to the most anxious inquiries, prompted alike by the obscurity of the complaint and sympathy with the sufferer, was yielded to the first touch of the anatomist's knife. The crumbling ribs proclaimed the presence of a disease of the osseous system, not more remarkable for its phenomena than terrible in its effects. *Mollities* and *fragilitas ossium* is, fortunately, not a common disease, but almost all the records of it which we possess agree in representing it as one scarcely paralleled for the amount of pain and misery which it inflicts. There was, therefore, little hesitation felt, even on the threshold of the *post mortem* investigation, in connecting this early announcement with the antecedent history of the case, as well as its most unaccountable accessory,—the peculiar condition of the urine. Every successive step in the investigation led to the same conclusion, by disclosing a similar disorganization of structure in other districts of the body, which had, during life, been the seat of suffering.

The bones were not subjected to chemical analysis, but their diminished bulk, their lightness, flexibility and brittleness sufficiently attested their having been, in great measure, despoiled of their natural constituents, both animal and earthy,—in that condition, in short, which Mr Solly has appropriately denominated "Osteo-malacia fragilis rubra." The identity of the two cases was further established by the minute morbid anatomy of the diseased structures in each. Mr Dalrymple, who, in our case, kindly undertook the microscopical examination of two of the affected bones (a rib and two lumbar vertebræ), has given the result of his observations in an interesting paper, communicated to the Dublin Quarterly Journal of Medical Science, for June 1846. It would appear from this investigation, that the disease had commenced in the cancellated structure, but that the external laminæ were also involved, being much reddened and atrophied. The material filling the large cancellous cavities in the interior was found to be composed of granular matter, oil-globules, nucleated cells, constituting the bulk of the mass,—a few caudate cells and blood disks extravasated largely amongst the other cells, and giving the red colour to the gelatiniform mass.

This account accords very much with Mr Birkett's description (given in Mr Solly's paper) of the microscopic anatomy of a bone affected with *mollities ossium*, and seems to point to a disease essentially malignant in its nature, but differing, according to Mr Dalrymple, in some special particulars from the true malignant disease of bone as we are accustomed to regard it. Instead of progressively reproducing and developing themselves without limitation, the new and morbid formation which replaced the original and sound structure seem to have been, at an early stage of their existence, removed by absorption and carried out of the system.

The disease, in the present case, could not be traced to any direct exciting cause. The patient was of temperate habits and exemplary conduct; he married early, had a numerous offspring, and, with the exception of two or three severe attacks of frontal neuralgia, enjoyed uninterrupted good health, till within a year of the first date of this illness, when he was observed by his family to be easily fatigued, and to stoop in walking. I have also been informed by a male relative, that he complained at that time of being incommoded by frequent calls to make water, and was much disconcerted by finding his body-linen stiffened by his urine, although there was not the least urethral discharge. From these circumstances it may be inferred, that the malady had made considerable progress at the period of the accident, which probably caused a breach of continuity in the already fragile case of the diseased sternum and ribs, the consequence of which would necessarily be the immediate and subsequent agonies which he suffered.

With reference to predisposition, and certain alleged causes of the disease, I must not omit mentioning, that the patient's father died, at no very advanced age, a martyr to gout, and his mother, rather suddenly and unaccountably, a few days after undergoing extirpation of a scirrhous tumour from the breast, performed by a distinguished London surgeon.

While the case came to the same fatal conclusion as all recorded examples of this formidable malady, it is not unimportant, in a practical point of view, to note that the juvantia and lædentia corresponded very closely with the experience of preceding observers. Whatever amount of improvement was at any time remarked, took place, under corroborating therapeutic measures, whilst an aggravation of suffering invariably followed depressing remedies, or exhausting influences. Twice was the disease seen to make a start after the loss of blood; and on the second occasion its career was arrested in a remarkable manner by a powerful tonic, and the invigorating influence of country air; the accidental supervention of diarrhœa gave it renewed and resistless impetus, the few temporary checks and mitigations which it received in its subsequent course, occurring under the use of means directed to uphold the constitutional powers. In the case detailed by Mr Howship, sanguine hopes of recovery were at one time entertained from the great amelioration which took place from the conjoint influence of Peruvian bark and sea air. These facts are not without their practical application, and might be more valuable if we could detect the disease in an early stage, when it may be presumed to be more amenable to appropriate treatment. On this point, the remark of Mr Curling is not to be disregarded, viz., that we should bear this disease in mind when treating pains of the limbs of an obscure and intractable character.

That the disease, in the present instance, was so long under observation without being recognised, arose from the circumstance of its having been limited to a district of the body in which the bones are not often subjected to the effects of violent muscular exertion or external force. Like may other severe and fatal maladies, the affection is obscure in its origin, and insidious in its progress. In no recorded case with which I am acquainted was it discovered, or even suspected, till curvature, displacement, or actual fracture of a cylindrical bone had occurred, and unequivocally declared its presence. Down to some such deplorable incident in the history of these cases, the patients were supposed to be labouring under some grievous form of gout, indomitable rheumatism, or syphilitic contamination; notwithstanding the expressive character of many of its leading features, there is reason to fear that, without some supplemental token of more definite and distinctive significance, the disease will continue to elude detection, till it has arrived at its stage of full development and incurability. It is this consideration that, in my mind, invests the properties of the urine voided by this patient with their chief interest.

Amongst the striking phenomena presented by *mollities ossium,* whether occurring as simple softening, or softening conjoined with brittleness of the bones, an altered condition of the urine has been very generally observed. The alteration hitherto noted has been an augmented proportion of the earthy constituents of that fluid. In some cases, as in that of Sarah Newbury, this has been demonstrated by chemical analysis only. In other instances the calcareous matter has been deposited in a palpable form, and to an enormous amount, as in the celebrated case of Madame Supiot, which was an example of pure softening, and in the instance recorded by Mr Thomson, which was one of softening and fragility. Even when nothing peculiar has been observed in the appearance of the urine, there have been found, after death, calcareous depositions in various structures, as in Mr Curling's case, where the deposit was in the lumbar and iliac glands, and in Mr Solly's second case, where, although earthy matter does not appear to have been present in the form of a sediment, the urine, on analysis, yielded three times the quantity of healthy urine, and on dissection, phosphate of lime was found clogging up the calyces and pelvis of the kidney, forming there a solid calculus.

These facts justify the general belief, that in *mollities ossium* the earthy parts, so remarkably deficient in the affected bones, are in the first instance taken up by the absorbents, then separated from the circulation by the kidneys, and finally swept away with the urine, as the debris, so to speak, of a dilapidated and mouldering structure. Assuming this to be the process going on in *softening* of the bones, we should be led by analogy to infer, that in an opposite condition,—fragility,—their animal constituents, the albumen, fibrin, and gelatine, to which they owe their natural cohesion and tenacity, would in like manner be taken up by the absorbents, and thrown out of the system by the kidneys. Hitherto, however, so far as I know, no positive evidence has been adduced to show that such is the fact. It is true, that in Mr Howship's case we find mention made, on two occasions, of the urine being loaded with albumen, but the agency by which the presence of this material was ascertained is not stated; and the account given by that writer is not altogether decisive of the nature of the deposit which he denominates albumen.—"The urine, on examination," he says, "was loaded with albuminous matter, which, on cooling, formed a sediment; but when, by the obliging attention of Professor Brande, it was submitted to analysis, nothing decidedly singular in its constitution was ascertained." Again, he says, "the urine passed this morning was scanty and of the former brown colour, but deposited a fine albuminous sediment, a shade lighter in colour than the fluid itself."

This account would imply, that the albuminous deposition took place spontaneously, a mode of separating not met with, except when the albumen occurs as a component of purulent or mucopurulent matter mingled with the urine, not in chemical union as in ordinary albuminuria and the case before us. From the fact of the deposit not taking place till the urine cooled, it is possible, that Mr Howship, trusting to inspection alone, may have mistaken for albumen a copious sediment of the triple phosphates, or of pale lithates, which, without the aid of tests, cannot be easily discriminated from deposit of pus or mucus. At all events, this passing notice of the presence of albumen, does not appear to have attracted the attention of subsequent observers, for we find Miescher,* one of the latest systematic writers on diseases of the bones, suggesting a breaking up and absorption of their animal constituents as the true explanation or "ratio symptomatum" of fragility. After stating the familiar fact, that in softening the earthy matter is absorbed and excreted with the urine in the form of a cretacean sediment, he proceeds to observe, with respect to fragility,—"causa proxima fragilitatis quæsita est in resolutione partium ossis animalium, qualem ars ossa in machina Papiniana coquendo, vel calcinatione efficit, earundumque resorptione; quanquam chemia hanc opinionem nondum comprobavit."

Whether the desired demonstration be found in the case now given, must be decided by future and more extended observation. Meanwhile, as far as the evidence of a single example avails, we have undoubted proof of the discharge from the body of an amount of animal matter, apparently equivalent to what was missed from the bones. It would, however, be premature, and not strictly accordant with the analogy afforded by other diseases, to assume the invariable concurrence of these two conditions in *mollities* and *fragilitas ossium*. Nature does not always rid the system of morbid products, and, when disposed to do so, she has a choice of emunctories whereby to eliminate effete and excrementitious materials. Indeed, evidence to this effect, of no equivocal character, is supplied by the strange symptoms which have been frequently seen to attend the disease.

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* De Inflammatione Ossium, eorum q. Anatomia generali. 4to. Berol. 1836.

Besides the deposition of a chalky sediment in the urine very generally observed, the cutaneous and other excretories have in some cases been actively employed in throwing off products of an unnatural kind. In one instance the urine, it is said, was high coloured, turbid, and fetid, and the hands and feet were constantly covered with an unctuous humour, which, as it dried, thickened into scales; in another case, the perspiration was abundant, and possessed an unusual fetid odour; in a third, there were copious sweats, and almost incessant salivation; and in the extraordinary case of Madame Supiot, the saliva as well as the urine stained the linen black. Mr Curling, in noticing these facts, makes a remark, the justice of which cannot, I think, be questioned:—"Now all these circumstances would seem to indicate, that the blood was loaded with something which it was glad to get rid of by any of its natural outlets."* In the instance before us it would seem that the kidneys had been selected for this purpose, and had not only proved equal to the novel office assigned them, but, what is more extraordinary, had discharged the task without sustaining, on their part, the slightest danger. During the two months that the case was under my eye, the solid animal matter daily cast out of the body in this manner was roughly estimated, from repeated observations, as not much less than a moiety of the entire quantity of urine excreted. Thus, on the 4th of November, when the patient was passing forty ounces, the daily average, sixteen ounces of it, having a sp. gr. of 1038°, yielded, on boiling, a firm coagulum weighing nine oz. and two dr., while the residual liquor which had resisted coagulation, with an additional quantity supplied by slow exudation from the clot, amounting altogether to eight ounces, was found to exhibit a correspondent reduction in density, its sp. gr. being only 1022°.

But enormous as was the quantity of animal matter thus shown to have been incorporated with the urine, its presence had nearly escaped observation. It is true that its discovery was effected by means of heat and nitric acid, the tests commonly employed, singly or conjointly, for displaying albumen when it exists either as a natural constituent of animal fluids, or as a morbid component of urine; but in the present instance these agents, when employed in the usual way, failed entirely as tests; and it was not till they were applied in a modified manner, that they succeeded in detect-ing and disengaging the alien ingredient, displaying at the same time a set of novel and remarkable reactions, which seemed to bespeak the existence of some special disease bearing but a distant relation to any of those derangements of function or structure which we are accustomed to associate, with ordinary albuminuria.

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* On some of the Forms of Atrophy of Bone.—Medico-Chirurgical Transactions, Vol. xx., p. 391.

The most striking peculiarity which distinguished this from any other specimen of urine I ever examined, and in an especial manner from that excreted in Bright's disease, was its behaviour with nitric acid. The reaction of nitric acid and ordinary albuminous urine are so uniform and constant, that they are received as the most trustworthy evidence of the presence of albumen, the acid never failing to produce an immediate and notable coagulation in urine containing the foreign ingredient. But in our patient this familiar and convenient test failed, like heat, to give any immediate intimation of the presence of animal matter. On the contrary, the absence of albumen was, in the first trials, not unnaturally inferred from the circumstance of the urine, previously hazy, becoming instantly clear on dropping the nitric acid into it; and it was only on inspecting the test tube some hours afterwards, that its contents were seen to have undergone the remarkable change already described. I was at first inclined to think that some mistake had occurred, but on repeated trials with other specimens, and closely watching their course, the results were always found to be the same. A slight yellowish opacity was the first announcement of a change going on in the mixture; this gradually deepened in tint, with increasing consistency of the fluid, till the whole congealed into a bright and somewhat resplendent mass, presenting very much the appearance of a heap of nitrate of urea scales blocking up the tube. It further resembled that substance in liquefying on the application of heat and again concreting on cooling; but no true crystalline arrangement could be perceived, the sparkling appearance being evidently due to numerous air-bubbles entangled in the mass. Perfect redissolution took place when the tube was held for a few minutes in the flame of a spirit-lamp, or plunged into hot water at 160° or 170°, the ordinary coagulating point of albumen; and the fluidity thus acquired persisted under ebullition, however prolonged.

Not less interesting was the modifying influence of temperature in another particular,—viz., the time required to bring about the change in question. An hour was the shortest period in which coagulation was effected by the acid when the experiment was carried on at the ordinary temperature of the atmosphere, whilst the same result was almost immediately obtained, if the urine were previously boiled and suffered to cool. A rather pretty variation of the experiment, exhibiting this modifying influence.

consisted in heating to ebullition the upper portion of urine contained in a tall test-tube, and then adding the nitric acid: the acid instantly discharged a slight opacity of the hot fluid due to the presence of phosphates; but as soon as it reached the cold stratum below, a production of yellow coagulum was seen to take place, and continue to form in the track of the acid as it traversed the fluid to the bottom. Every successive drop thus added was followed, in descending, by a slender yellow trail, resembling a string of vermicelli, till, by their accumulating, they occupied the whole of the lower division of the tube, like a plug of yellow butter, contrasting strikingly, at the moment, with the clear fluid above. The contrast did not, however, last long, for as the upper stratum of urine cooled, it became first turbid, then opaque and yellow, the entire contents of the tube soon presenting one homogeneous mass of golden hue. This, like the coagulum obtained in the previous experiments, melted on being heated, and re-formed on cooling.

It cannot be doubted, I presume, that reactions such as I have described must have belonged to a peculiar kind of morbid urine. It must, however, be a peculiarity of rare occurrence: for I have not, in the course of my reading, met with any notice of albuminous urine presenting reactions precisely similar. The nearest approach to it I find briefly mentioned in Solon's Treatise, p. 423.* It occurred in the case of a young rheumatic subject, who was attacked with endocarditis, and was improving under sanguineous depletion. For the space of two days this patient, it is said, voided albuminous urine, presenting some remarkable characters. It yielded a copious coagulum both to heat and nitric acid, but that resulting from the latter, on being heated, suffered redissolution. The appearance here was temporary, and Solon was inclined to consider it analogous to what takes place in simply precipitable urines, or when nitric acid is added in large excess to a feeble albuminous precipitate.

It was, of course, an object of considerable interest in our case to determine what was the precise nature of the substance resulting from the action of the nitric acid on the urine—whether a peculiar modification of albumen, pre-existing in the urine as a morbid ingredient, and liberated from it in the form of a precipitate, or a new compound evolved during the experiments, under the play of chemical affinities. The task of investigating this point fell into able hands. In one of the first procured specimens of the urine, Dr Prout found the urea and lithic acid in about the usual proportion; and from the whole of the phenomena exhibited in the course of the inquiry, he pronounced the animal matter present to be albumen in some peculiar state of combination or condition. In a note with which he favoured me at the time, he says—"I have found albumen in this state before, but never in such large quantity. I regard it as the material which, if the kidney had done its duty, would have been converted into lithate of ammonia."

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* De l'Albuminurie. Par Martin Solon, D.M.—Paris, 1838.

ART. IX.—*Remarks on the Pathology of* MOLLITIES OSSIUM. By SAMUEL SOLLY, F.R.S., &c. (Medico-Chirurgical Transactions. Vol. xxvii. London 1844.) [Abstract.]

As in the preceding article reference is made to the observations of Mr Solly on MOLLITIES OSSIUM, it may render the information communicated by Dr Macintyre, Dr Jones, and Mr Dalrymple more complete, if a short account of the facts observed and the inferences deduced by Mr Solly be subjoined.

The observations of Mr Solly are deduced from two examples of the disease, both taking place in females. One took place in a woman aged twenty-nine, who became insane after an attack of rheumatism, in 1839, and who was successively in St Luke's Hospital, the Marylebone Infirmary, the Islington Infirmary, the Lunatic Asylum at Hoxton, and finally at Hanwell, where she died, on the 28th October 1842.

The body, examined on the 29th October, at Hanwell, disclosed the following state of the bones.

The height, measured after death, was four feet two inches. The emaciation was great. The head was large in proportion to the size of the body; the chest was very much deformed, pinched up, and projecting anteriorly—very narrow from side to side. The ribs appeared widened; the pelvis extremely narrow. The spine was curved forwards, almost at a right angle in the upper dorsal and cervical regions. Both clavicles were broken and bent at an acute angle. The head of one humerus was swelled; the shaft of the left broken and bent; the radius and ulna were slightly swelled; the right radius broken; the lower extremities enlarged at the epiphyses. The thigh-bones on both sides were broken; that on the right side in one place, that on the left in two places; the fractured portions were held together by the periosteum; but no attempt at union,—no trace of callus was observed. The tibia and fibula in both limbs were bent. All the bones of the extremities could be broken with the slightest force; by merely pressing them between the finger and thumb they gave way, and were cracked like a thin-shelled walnut.

A longitudinal and transverse section of the long bones showed that the osseous structure was nearly absorbed, a mere shell being left. The interior was filled with dark-coloured grumous matter, varying in colour from that of dark blood to a reddish light liver colour. Mr Solly could not detect in it any pus globules by the microscope. The bones of the vertebral column and the ribs were similarly affected.

The cranium was very much thickened, and at least half an inch in diameter, so soft as to be easily cut with a knife, and very vascular. The two tables were confounded, and the diploe was obliterated. Thin slices of the skull, under the microscope, showed that a considerable alteration in its intimate structure had taken place. The laminated structure of the outer and inner tables had extensively disappeared. The canals of Havers were greatly dilated, and the osseous corpuscles were diminished in quantity.

All the joints were healthy; and the cartilages were perfectly natural.

The brain weighed two pounds five ounces and a half. The arachnoid membrane was milky and slightly thickened. The brain, as well as the viscera of the chest and abdomen, were perfectly healthy.

The bone, analysed by Dr Leeson, gave the following results:—

	Marrow.	Bone.
Animal Matter,..........................	24·78	18·75
Phosphate and Carbonate of Lime,...	1·83	29·17
Water,..................................	73·39	52·08
	100·00	100·00

The second instance of MOLLITIES OSSIUM Mr Solly saw in a married female, aged thirty-nine years. Her height at the time of marriage was about five feet five inches and a half. The figure was slight. About three years previous to the fatal termination, namely, in May 1840, she was attacked with violent pain in the back while stooping, and a sensation in the right leg as if a pea were rolling up and down. More than twelve months after this she suffered much from pains, which she considered rheumatic, and was feeble in the limbs. Between February and April 1842, she was unable to walk, unless on the left leg, and dragging the right after her. In April 1842, when her husband was lifting her from the fire-place to carry her to bed, she suddenly felt most excruciating pain, as if the thighs were being broke in many pieces; and after this time she was entirely confined to bed.

The symptoms of the disease advanced steadily, many bones giving way, with more or less pain and suffering. On the 15th of April 1844, the patient was admitted into St. Thomas's Hospital, and died suddenly on the 20th, without any circumstance occurring worthy of particular notice, except extreme distress and agony in the organs of respiration, and a purple colour in the face immediately before the last expiration.

The immediate cause of death seemed to be asphyxia.

The urine contained between three and four times more phosphate of lime than healthy urine.

The blood contained nothing abnormal.

The body, inspected on the 21st April, at 10 A.M., with the thermometer at 60° Fahrenheit, disclosed the following state of the skeleton.

The body was greatly emaciated. The integuments of the head and face and upper part of the neck were livid.

The radius and ulna of the right arm had given way about the middle; the metacarpal bones and phalanges of the right hand were all flexible. On the left side all the bones of the upper extremity appeared in their natural condition, inasmuch as their form was not altered; but on subjecting their strength to trial, they yielded to a very slight force; and they might be bent in almost any direction,—the laminated shell breaking off short.

In the lower extremities the tibia and fibula of the left side yielded about two inches from the knee joint; below this point they were firm. Those on the right side resisted pressure; and though they were not so heavy or so firm as in a healthy subject, the disease had made in them very little, if any, progress.

The calvarium was very soft. The inner surface was more vascular than Mr Solly remembers ever to have seen it. The *dura mater* was excessively adherent, and when torn off, innumerable vessels poured forth blood in large quantity.

Within the cavity of the arachnoid membrane was some serous effusion.

The brain was throughout healthy. The hemispherical ganglion was natural in appearance, neither pale nor dark-coloured.

The *thorax* was so much diminished in its transverse lateral diameter, that a skewer passed from one side to the other, through the intercostal space between the fifth and sixth ribs, gave only four inches. On the right side a general depression of all the ribs had taken place; but on the left, the fourth, fifth, and sixth ribs were especially bent inwards, immediately over the heart. In this hollow it was that the heart could be seen pulsating during life. The pleura and pericardium were healthy.

The right lung was compressed to about one-fourth of its natural size, presenting the appearance which it does when hydrothorax is present; for it was extensively congested, almost impervious to air, and much consolidated, though not from inflammatory exudation. The left lung was also diminished in size, but to not more than half the extent of the right; it was likewise much congested. The heart was natural and full of blood.

The intestines were tympanitic. The liver presented marks of venous congestion. The spleen was small, and rather sanguine. The pancreas was healthy.

The lacteals were distended with chyle, which presented the ordinary granular appearance of this fluid.

The thoracic duct was almost empty. The fluid which it contained consisted of granular matter, similar to that of the lacteals, and also some chyle globules of the usual character. The sympathetic nerve, examined in different points, presented nothing unusual.

The left kidney contained a concretion of considerable size, which was found to consist solely of phosphate of lime.

The female organs were healthy.

Sections of the Bones.—The bones of the skull were not thickened. They were very vascular and soft, though by no means so much as in the first case; they contained a small quantity of the same kind of red substance which was observed in the former case. Their sections presented a similar open reticular texture to that in the skull of the first case.

A section of the radius showed well the progress of the disease. At both extremities there was merely an unnatural degree of vascularity, though the vessels forming it were not very red. The head of the bone was more injected than its lower end. At the lower part of the upper third, the cancellated structure had been partially removed, and its place occupied by red grumous matter. So little of the earthy matter had been removed that the bone retained nearly all its natural firmness.

The breast-bone did not externally seem much altered in firmness, nor was it at all altered in form. Internally, however, the disease had made considerable changes; the earthy matter was removed in patches, and in its place was the red substance. The whole internal substance of the bone was of a deep-red colour, and large cell-like cavities, irregular in size and shape, had been formed.

The ribs and vertebræ presented similar appearances.

In the right thigh-bone, which alone was divided, the whole of the osseous matter had been removed, and nothing but periosteum and membranous matter was left. At the upper part of the lower third of the bone, the red matter was abundant, presenting various hues, from deep Modena red to bright crimson, the bony shell being left, but as thin as a wafer. Towards the condyles a portion of the bone was nearly of its natural colour, only yellowish and softer from much fatty deposit. The extremity of the bone, to the extent of about one third of an inch, was of a bright-red colour, contrasting strongly with the clear, healthy colour of the cartilage. This redness was the effect of injection of the vessels. It was rather deeper than that of the sternum.

The cells which contained the red matter were distinct throughout the section; but from some of them this matter had been removed, and its place was occupied by clear serum. The head of the bone was completely hollow, and filled with serum. At the lower portion of this part of the bone were two smaller cavities filled with the same material.

The red matter was examined microscopically by Mr Birkett, Mr G. Rainey, and Mr Simon.

That in the cellular spaces of the cranial bones was a soft, reddish, gelatinous solid, susceptible of removal from these spaces. It mingled readily with water, rendering the fluid turbid. In it Mr B. saw cells with nuclei of two kinds. The first were round, clearly exhibiting a nucleus and nucleolus. These were, however, few in number, and could not be said to compose the mass of the solid, which apparently contained a delicate fibre of fatty matter. The second kind of cells were clear, with distinctly-defined edges, and the clear oval outlines enclosing one bright central nucleus, rarely two, never more. They showed a tendency to be elongated into caudate cells; but this appearance was rare. Many other cells, irregular in figure, some with, others without, central nuclei, were observed.

In the bones of the vertebræ were large cavities, filled with a dull, oily, reddish matter, which contained a great number of cells, having an irregular outline, and some a very distinct nucleus, rendered more distinct by acetic acids. No distinct caudate cell was observed. The identity of these cells with pus globules, and the nucleated cells of malignant structures, it was difficult to determine. They were larger than pus globules commonly are. In the femur Mr B. saw nothing but fat cells and blood disks.

According to Mr Rainey, the red coloured gelatiniform matter consists of a multitude of roundish bodies, about the size of the blood-corpuscles, each filled with a minutely granular substance. It contained also fat globules, but no regular vesicles; and it appeared to be wholly destitute of any fibrous or cellular structure.

Mr Simon found great excess of the natural fatty matter, and disproportion of the medullary cells to the substance of the bone; and cytoblasts in great abundance.

MOLLITIES OSSIUM is not confined to the human race. Mr Birkett learned from Mr Spooner, Professor of Anatomy in the Veterinary College, that in some hounds belonging to Lord Middleton the bones were much softened, one bone after another. Inspection showed the same deposit of red matter, and great vascularity of the cancellated and laminated structure of the bone.

On the causes of this disease nothing satisfactory is known. It has taken place more frequently in females than in males; and the most severe cases have taken place in women confined in damp prisons. It is manifestly a disease differing in several respects from rickets.

The pains by which it is preceded and attended have been called rheumatic pains. But they resemble these only in the course which they follow through the limbs; in the racking sensations which they cause; and in the inability to make any locomotive or muscular effort, which they induce; and though it is said that the disease has followed symptoms of rheumatism, yet it is scarcely possible to admit the identity of rheumatism and MOLLITIES OSSIUM, without disregarding all the distinctive characters of diseases.

Mr Solly is induced, from attentive consideration of all the facts, and especially the appearances found in the dead body, to regard the disease as of an inflammatory character; and to infer, that it commences with a morbid action in the blood-vessels, which gives rise to severe pain in the limbs. The absorbent vessels, he thinks, are, at the same time, unnaturally excited; and the earthy matter of the bone is absorbed and thrown out by the kidneys.

The case given by Dr Macintyre shows that not only earthy, but animal matter, is removed and carried out of the system.

All treatment appears hitherto to have been of little avail. But residence in dry dwellings, and nutrition by good nourishing food, are recommended as beneficial.

PART II.

CRITICAL ANALYSIS.

Art. I.—1. Vichy *et ses Environs, ou Description des Eaux Thermales, et des Sites Pittoresques qui les entourent; avec quelques Considerations sur l'Action Medicale des Eaux; Ouvrage orné avec huit Lithographies.* Par H. Lecoq, Professeur d'Histoire Naturelle, Directeur du Jardin de Botanique de la Ville de Clermont-Ferrand, &c. Paris, Londres, Clermont, 1836. 8vo, pp. 244.

Vichy and its Environs; a Description of the Thermal Waters and of the Picturesque Situations by which they are surrounded; with some Considerations upon the Medical Action of the Waters (Eight Lithographs.) By H. Lecoq, Professor of Natural History, Director of the Botanic Garden of the City of Clermont, &c. Paris, London, and Clermont, 1836. 8vo, pp. 244.

2. *Rapport sur l'Emploi des Eaux Minerales de Vichy dans le Traitement de la Goutte, lu a l'Academie Royale de Medecine dans sa Seance du* 24 *Mars* 1840, *au nom d'une Commission.* Par M. Patissier, Membre de l'Academie Royale de Medecine. Paris, 1840. 8vo, pp. 240.

Report on the Employment of the Mineral Waters of Vichy in the Treatment of Gout. Read to the Royal Academy oi Medicine on the 24th March 1850, in the name of a Commission, by M. Patissier, Member of the Royal Academy of Medicine. *Followed by an Answer to some Allegations against the Solution of Urinary Calculi,* by Charles Petit, D.M., &c. Paris and London, 1840. 8vo, pp. 240.

3. *Du Mode d'Action des Eaux Minerales de Vichy et de leurs Applications Therapeutiques, Particulierement dans les Affections Chroniques des Organes Abdominaux, la Gravelle, et les Calcules Urinaires, la Goutte, et le Diabete Sucré.* Par Charles

PETIT, D.M., Membre de la Societé de Medecine de Paris, et Medecin-Inspecteur-Adjoint des Eaux de Vichy. A Paris, 1850. 8vo, pp. 504.

On the Mode of Action of the Mineral Waters of Vichy, and on their Therapeutic Applications, particularly in Chronic Disorders of the Abdominal Organs, Gravel and Urinary Calculi, Gout and Diabetes Mellitus. By CHARLES PETIT, D.M., Member of the Society of Medicine in Paris, Adjunct Physician-Inspector of the Waters of Vichy. Paris, 1850. 8vo, pp. 504.

IN the central and southern region of France, between the latitudes of 47½° north, and 43° south, is a tract of elevated and mountainous country, which is in all respects a territory of unusual interest. Forming a table-land, which rises in different parts to the height of between five and six thousand feet, it is the source whence arise the Loire, Allier, the Gironde, and Garonne, and several other important rivers, which fall into the Bay of Biscay on the west coast of France. The elevations are so arranged, that they often enclose lakes of some extent, and in other instances, spacious basins, or hollows, and valleys intersected by mountain streams, and traversed by rivers. These lakes have been regarded by the geologist as indicating the effects, and denoting the situation, of the craters of extinguished volcanoes; and the Alpine valleys and basins which various of these mountainous ridges enclose, have been thought to show, that formerly these were also occupied by lakes, the barriers of which having given way at one extremity, the waters escaped, and gradually or speedily retired from their mountainous beds, and which were then, more or less, rapidly converted into valleys, traversed by one or more streams.

It is scarcely necessary to say that this district is Auvergne, a country which, though important to the antiquarian and historian, is not less interesting to the observer of nature. The mountainous table-land bears satisfactory evidence of having been the seat of long-continued and violent volcanic action, at a period beyond the bounds of authentic history. It is mostly composed of porphyritic, trachytic, and allied rocks, which are usually believed to have been the result of igneous action. Indications of the effects of subterranean heat are still manifested in many parts of the region. Independent of the lavas found in the mountainous districts, and the crateriform appearance of the mountains, in some parts there are mineralized clays of high temperature, as at St Amand; in others, hot and thermal mineral springs are found, as at Saint Nectaire and Saint-Allire, Mont d'Or, Chateldon, and Vichy; in numerous points, bitumen exudes from the fissures of rocks, and even from the tertiary strata; and in all the flanks of the mountainous barriers there are multiplied evidences of organic remains, which have for periods of variable length been submerged under water. The thermal mineral waters, and the exhalations of carbonic acid and other gases, have been very generally regarded as the traces of extinct volcanoes,—the last sighs, as M. Rozet, by a figure rather strong, calls them, of these great commotions. They may at least be regarded as proofs of the high temperature of the interior of the earth. Above this elevated land arise various peaks, as the Plomb de Cantal, the Mont d'Or, the Puy de Dome, and others less elevated, all of which appear to be the outlets of long chimneys rising from a great depth in the interior of the earth.

One part of Auvergne is very similar to another; and the description of one division of this subalpine region, if it do not exactly represent the whole, makes, nevertheless, a sufficiently near approach, to communicate just ideas on the general physical characters of the country. The part with which we are at present most interested is the eastern and northern district of Auvergne, and the conterminous tract of the Bourbonnais.

The mountainous elevations which form the greater part of Auvergne, and the adjoining province of the Vivarais, may be distinguished into four groups, which, for the sake of easy reference in any good map, may be designated as, *first*, the chain of Puy de Dome; *secondly*, the chain of La Margeride; *thirdly*, the chain of the Cevennes; and, *fourthly*, the chain of La Forez.

First of these comes the main chain of Puy de Dome, which follows a main course from north to south; that is, from about the forty-seventh degree of north latitude, a chain of mountains pursues a direction nearly due south, but with a slight inclination from north-east to south-west to the forty-fifth parallel of latitude, or a little beyond it; and in the course of this tract, it forms the three principal elevations of Puy de Dome, Mont d'Or, and Cantal, all nearly in one straight line. This chain of the Puy de Dome and Cantal consists almost entirely of trachytic rocks and basalt, rising through granite and gneiss. On the eastern side of the chain, however, there is a tertiary deposit, indicating the former presence of water, and forming the present basin of the Allier.

In the second place, from the right bank of the Rhone, not far from Lyons, in latitude forty-five degrees, or forty-five degrees and a-half, runs another chain of mountains in a direction obliquely south-west to the forty-third parallel of latitude, and terminating at Cannes, not far from the coast of the Mediterranean. This chain, which extends between two degrees and a-half longitude east from Greenwich to nearly five degrees, is the Cevennes. The elevation is less than that of the chain of Puy de Dome and Cantal, being not more than 1700 metres, or 5624 feet English.

In the third place, these two main chains are united by a third, which runs transversely between them from the situation of Plomb de Cantal in the former, to that of Mende and Lozere in the latter, or, reckoning by latitude, from forty-four degrees 20′ to forty-five degrees. This cross or intermediate chain is that of the mountains of La Margeride. The situation of this chain of La Margeride, the direction of which is from north-west to south-east, may be regarded as indicating the most elevated table-land of the region, as it denotes the separation or water-shed of two, if not three, different hydraulic systems. On the north of this mountainous barrier of La Margeride, all the streams flow to the north, receiving this direction from the northward declination of the country, and from the north-south chain of Puy de Dome and Cantal, through nearly three degrees, or 210 miles, and forming the Allier and the Upper Loire, and the multiplied tributaries by which these two rivers are supplied. On the south of the ridge of La Margeride, all the streams flow to the south and west, and send their waters principally to the Dordogne, the Garonne, and Gironde. Some of these, it is also to be observed, flow from the west side of the Cevennes, the southern division of which forms the line of separation between the valley of the Lower Rhone and the high lands which furnish the affluents of the Garonne. A few streams of short course find their way from the eastern side of the Cevennes either into the Rhone, or directly into the Mediterranean. Such, for instance, are the Agde and the Aube, and a few others of less note.

In the fourth place, there is situate on the north of the ridge of La Margeride a chain of mountains running from south to north for about sixty or seventy miles, and rising to the altitude of about 1300 and 1360 metres, or 4499 feet English. This ridge, which is that of the mountains of La Forez, forms the line of separation between the basin or valley of the Allier and that of the Loire, the waters of the former river flowing on the west side of La Forez, while those of the Loire drain the eastern side. These mountains are mostly granitic, but passing into gneiss towards the southern part, about the level of Issoire, and Saint Germain-Lherm. This granitic and gneissy mass is further largely traversed by numerous veins of quartz, of trap, of diorite, of hornblende, of eurite, and of porphyry. This ridge sends out in its northward course several lateral branches or subordinate ridges; but the most important of these is one at the level of Courpierre, which advances westward and a little south on the valley of the Allier, between Issoire and Billom, where, close upon the river, it terminates in an abrupt elevation, which rises to the height of 400 metres, or 1323 feet above the waters of the Allier. The situation of this notch, as it were, in the mountain chain on the east side of the Allier, is, in this respect, important, that it marks the termination of a similar mountain branch or subordinate off-shoot, proceeding from Mont d'Or, on the west side of the valley, and advancing towards the east. These two ridges traverse at right angles the valley of the Allier, which is known, as shall be immediately stated, under the name of La Limagne; and, as they appear to have had the effect of elevating the lacustrine deposit which is found on their flanks to the height of 800 metres above the level of the sea, or 450 metres or 1488 feet English above the waters of the Allier, the conclusion has been drawn, that at a very remote period these ridges enclosed a mountain lake, which had been subsequently drained by the disruption of the chain of rocks at the point indicated by the present bed of the Allier.

Some miles higher up the valley, and consequently farther south, between Vieille-Brioude and Saint-Georges-Daurat, from each of these gneissic chains are sent forth similar transverse dykes or barriers, and which in like manner interrupt the continuity of the Limagne. Though the height of this transverse barrier is less considerable than that of the one at the north of Issoire, being not more than 300 metres, or 1110 feet English, yet its effects have been the same,—namely, to raise the lacustrine deposits on each of its flanks. This barrier, which is continuous on the east side, or that of La Forez, with the basaltic system of Puy en Velay, runs on the west into the mass of Cantal. Its course is denoted by a series of culminating cones, which are centres of basaltic eruptions. These are readily seen by the spectator from the summit of Mont Cezallier, who, when looking to the south, recognises a long line of cones coming from the east, and which are lost in the body of the Cantal, and, on the north, a similar line of cones which terminate in the declivity of Mont d'Or.

It thus appears that the valley of the Allier narrow at its upper and southern extremity, undergoes two large contractions in its course, and it is only after it has finally emerged from the high mountain district below Issoire and Billom, that it expands into a basin of considerable width.

From the sides of the mountains by which this large valley is enclosed, descend many streams different in size, all of which find their way into the general channel of the Allier, which traverses the valley from its south-eastern extremity northward. Though the source of this river is not very distant from that of the Loire, in the south-eastern extremity of the ridge of La Margeride, yet, being on the east side of the mountains of La Forez, it is made to separate widely from the Loire, and to pursue a course not very remote from the base of the great chain of Cantal, Mont d'Or, and Puy de Dome, and between that and the chain of La Forez. After pursuing this course nearly due north for about seventy or eighty miles, it joins the Loire not far from Nevers; and the conjoined stream, making a large semicircular sweep to the west, where it flows by Orleans, Blois, Tours, and Angers, falls into the sea on the west coast of France, a little below the city of Nantes.

The district of the Upper Allier may thus be regarded as a long mountain valley or basin, enclosed on the west by the chain of Mont d'Or and Puy de Dome, on the south by the ridge of La Margeride, on the east by the Forez mountains, descending by a gradual declivity towards the north, where it opens, and is traversed by the Allier and the streams which on both sides convey their waters into this large channel. Bounded in the manner described, this mountain basin, which is known in the language of the country as the Limagne of Auvergne, belongs partly to Auvergne and partly to the adjoining province of the Bourbonnais. The southern or upper and most elevated part of this large valley forms part of the department of the Puy de Dome; the northern or lower portion belongs to the department of the Allier. In other words, the Limagne is a mountain basin which occupies the northern half of the department of Puy de Dome, and the southern portion of the department of the Allier.

It is computed that the space thus included between the two large chains of La Forez on the east, and the mountains of Auvergne,—Cantal, Mont d'Or, and Puy de Dome,—on the west,—amounts in breadth to about eight leagues, and exceeds in length thirty-six leagues, or extends through the space of one hundred and eight miles. Through the whole of this extent it is covered by a lacustrine deposit, which has been generally referred to the middle tertiary class. Argillaceous marls, white and red; marly limestone; siliceous, magnesian, and bituminous limestone; in other instances, rolled masses and pebbles, remains of animals, such as the rhinoceros, the elephant, and similar mammalia, with fresh water shells,—are the predominant characters of these deposits.

The general aspect and physical characters, and, it may be added, the geological structure, of this basin, have led the geologists of Auvergne to infer, that this basin was, at a very remote period, the site of one of those mountain lakes which are still found in the interior of the district; that it had forced a passage through the barrier or dyke at the northern extremity of the valley, and then poured its waters over the country subjacent; and that the Allier and its tributaries are the residual channels left, after the escape of this large intra-mountain reservoir. M. Lecoq observes, that the name Limagne, which he thinks is of Celtic or Aquitanian origin, is quite similar, or rather identical with that of

Leman or Lemanus, the sheet of mountain water which approaches the walls of Geneva, and which still preserves its ancient name. It seems scarcely possible to doubt, indeed, that this large valley was, at an early period, the reservoir of an immense body of water; for M. Rozet, in a recent account of the volcanoes of Auvergne, has shown, from a careful examination of the district, with the researches of previous inquirers before him, that it is impossible, in any other mode, to account for the lacustrine tertiary deposit and the diluvial deposits, which he describes over the surface of the Limagne at its different points.

It is chiefly towards the northern and lower regions of the Limagne that the traces of diluvial deposit, or those bodies which have been swept away some distance by forcible currents of water, are observed, though some are also seen in the upper district. Thus, upon the banks of the Dore, one of the affluents of the Allier, and along the base of the chain of La Forez, from Courpierre to beyond Vichy, there is an immense deposit of sand and rolled pebbles, principally quartzose, with fragments of granitic rocks, in which, M. Rozet adds, he has found no basaltic debris.* The black coloured rocks seen in this deposit are traps and diorite. This deposit, which immediately covers the tertiary strata and the granite, constitutes the base of the country included between the Dore, the road of Thiers, and that of Lezoux a Maringues.

There is still another deposit which, according to M. Rozet, is peculiar to the Limagne. The fertility as well as the beauty of this basin has been the subject of numerous panegyrics. This fertility is owing, he informs us, to a layer of black earth, which is composed almost entirely of lapilli and volcanic cinders, ejected from the chain of Puy de Dome, and wafted by the wind over the valley. Of this circumstance, which must have been of frequent occurrence in similar periods, he states that he was an eye-witness on the 17th of May 1841. About six o'clock in the afternoon, a very violent south-east wind raised among the volcanoes of Puy de Dome, large clouds of black dust, which being speedily carried to Clermont, and over the Limagne, diffused there, for a quarter of an hour, a great darkness, and deposited on the roofs and the pavement of apartments left open, as well as upon the whole soil, a layer, consisting of lapilli and volcanic cinders, from one to two millimetres in thickness. Rain followed heavily and dispersed all; so that the layer added to the Limagne might be thin. But had the wind continued, and the rain been a little later, the layer of new matter would have been much thicker. M. Rozet expresses the opinion, that the soil of the Limagne has been thus, in a great measure, formed, as transports of volcanic materials are frequent in the country. Whether this cause be sufficient to account for the fact, it is certain that not only the Limagne, but the sides of the volcanic mountains, are remarkable for their fertility, and for the beauty, richness, and variety of the vegetable products.

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* Memoire sur les Volcans de l'Auvergne. Par M. Rozet, Capitaine d'Etat Major. Deuxieme serie T. Premier. Premiere Partie. Paris, 1844. Memoires de la Societé Geologique de la France.

The truth we believe to be, that the Limagne owes its fertility very much to the same causes to which alluvial valleys in general are indebted,—namely, the large amount of debris and soil brought down during rainy seasons by the rills, brooks, streams, and rivers which descend from the mountains, and are incessantly conveying to the lower part of the district, the materials washed away from the upper. Along the banks of these streams the soil is invariably rich alluvial matter; and when to this is added the highly probable fact, that, at one period, the valley was either one great lake or a series of small communicating lakes, it will not appear difficult to explain the origin of its alluvial covering, and the fertility of the surface.

As the Limagne advances northward it expands and becomes broader and more spacious, partly because on the west side the chain of Puy de Dome terminates here, and partly because the eastern chain of La Forez recedes farther from the river. A little farther northward, where it advances on the Bourbonnais, the Limagne is still more expanded; and it is calculated that the basin of the Allier, or the original basin of the lake, amounts to twenty leagues in breadth, or sixty miles.

Immediately beyond Auvergne and the department of Puy de Dome, and just within the verge of the Bourbonnais, is placed the ancient town of Vichy, celebrated for its thermal alkaline springs. Though topographically situate, however, within the Bourbonnais, it is geologically and physically associated with Auvergne. To its contiguity to that territory of ancient volcanoes it owes its thermal waters; to its connection with the deep granitic, gneissy and feldspathic strata, there is strong reason to believe it owes its large impregnation of mineral alkali; the most abundant, perhaps, of any spring in Europe.

Vichy stands on the right or east bank of the Allier; and, in order to reach the town by travellers from Paris or from Clermont, the river must be crossed. For this purpose a suspension iron bridge is constructed, which, however, M. Lecoq commends more for its utility than its beauty. Previous to the construction of the bridge, the country people and all travellers were in the habit of crossing the river on a rude boat, or species of raft rather, in which men, women, children, cattle, sheep, horses, and all sorts of traffic, indiscriminately, were transported. Such is the force of habit, that this method of transport is still very much used, though it often gives rise to accidents, which appear, however, to be more ludicrous than fatal.

The town is distant from Paris eighty-seven leagues, or two hundred and sixty-one miles, fifteen leagues south from Moulins, the capital of the Bourbonnais; and about fifteen leagues north and somewhat east from Clermont, the capital of Auvergne. It lies east of the meridian of Paris about one degree and one-ninth, or 57 miles, so that the road from that city towards Auvergne is something inclined towards the east.

The town itself stands in a spacious valley, part of the large basin of the Limagne, and it is bounded on all sides by hills, which rise gradually from the banks of the river, until they terminate on the east side in the chain of La Forez, and on the west in some of the off-shoots of the Puy de Dome. These hills are cultivated, and covered by trees to a considerable height. On those, on both sides of the Allier, peach trees, almond trees, and walnut trees are abundant, and, in the spring and summer months, add much to the beauty of the scenery by the brilliant and varied colours of their blossoms.

From the hills on the right or east side of the valley descend two streams, the Sichon and Jolan, remarkable for the beauty of their banks. Between them, about half a league from Vichy, stands another town of high antiquity, Cusset; and after passing this place, both brooks pour their waters into the Allier, close to Vichy.

The thermal springs of Vichy were known to the Romans, and employed by them for purposes of ablution and salubrity. When the necessary excavations were in progress for digging the foundation of the present thermal establishment, which was erected in 1787, remains of baths, medals of Nero, and fragments of Roman earthenware, were found in considerable quantity. These springs are seven in number. They are not situate in Vichy, but in its neighbourhood; one of some note is on the road between Vichy and Cusset; and one, which belongs to the Hospital, is situate at the end of a garden, very near the ancient gate of Vichy. The springs are designated by the following names:—the *Grand Carré*, the Source of the *Hospital*, the *Grand Grille*, the *Lucas* Source, the Spring of the *Acacias*, the *Chomel*, and the *Celestins.*

1. Of all these, the most considerable is the *Grand Carré*, which is situate under the north gallery of the thermal establishment. Its temperature is elevated, being 113^{c} Fahrenheit; and it principally supplies the bathing places and the douches. It seems to have been so named from the circumstance of its having been formerly, previous to the construction of the new edifice, kept in a large quadrangular basin, within what was then called the Building of the King. Large as this is, it has been increased by the addition

of a small stream, which had previously been employed to wash the legs of horses, and the kitchen utensils of the establishment, but which is now prohibited from being applied to these purposes.

2. Next to the *Grand Carré* in the copiousness of its waters, comes the *Grand Grille*, which is situate at the extremity of the north gallery, and is also employed to supply the bathing places. Formerly, this spring was enclosed in the Building of the King, as it used to be called, along with the *Puits Carré;* and as both were secured by a large iron grating, this, to distinguish it from the *Quadrangular Bath*, was denominated the *Grand Grille*. This is the water of which the largest amount is consumed; and that of which most is drank on the spot.

3. Near the *Grand Grille*, and under the same gallery, is the *Puits Chomel*, a spring of small importance, which is only used for drinking, and the water of which is collected in a small tun, constructed of masonry. Its temperature ranges from 102—104 Fahrenheit, and bells of carbonic acid gas appear at the surface.

4—5. Upon the road to Cusset, and at a short distance from the thermal establishment, are two springs not very copious. One of these has received the name of the *Spring* of the *Acacias*, and the other that of the *Spring* of *Lucas*. They are a little different in temperature, 93° and 98° F., and are rarely used.

6. The *Spring* of the *Hospital*, which was formerly known under the name of *Gros-Boulet*, is situate in the Place Rosalie. Its waters are received in a circular basin, surrounded by an iron railing, and they usually present a very marked green colour. For a long time the waters of this spring were received in a stone receptacle, and were employed in different domestic purposes. At present they are conveyed into the hospital and the small auxiliary establishment adjoining, and thence they are conveyed by a subterranean conduit to the margin of the Allier.

7. Lastly, the least important of the mineral springs, that of the *Celestins*, is a little more distant than the others, and is derived from a rill of water which issues from the base of a large calcareous rock. Excavations, conducted with care, might greatly increase the product of this spring; for some attempts, made by M. D'Arcet, laid open a new spring, which was capable of supplying the deficiencies of the first.

The quantities of water furnished by these several springs are very different. One alone, the *Grand Carré*, gives more water than all the others taken together. M. Lecoq gives the following estimate, obtained by MM. Berthier and Puvis, of the amount of water furnished by each in the course of twenty-four hours, in cubic metres:—

The Grand Carré, . . .	172·0
The Hospital Spring, . . .	56·0
The Grand Grille, . . .	15·5
The Source Lucas, . . .	6·5
The Source of the Acacias, . .	6·5
The Chomel, ...	2·5
The Celestins, ...	·5
	259·5

Every estimate of this kind must be liable to fallacy and variations. But supposing this to make an average approach to the truth, the quantity, it must be admitted, is considerable. If the contents of the whole of the springs were collected in one reservoir, they would in twenty-four hours fill a basin or receptacle which would be twenty feet in every direction. This quantity would be sufficient, M. Lecoq observes, to supply about seven hundred baths in one day. When we consider the number of ages these waters have been flowing, and how much the springs discharge annually, it gives a most imposing idea of the amount of water contained in this neighbourhood, in the interior of the earth, and of the high temperature of the materials from which they are sent.

The temperatures of the several waters of Vichy have been examined at different periods by different observers; and the results, even for each spring, are not always the same. The following table is given by Lecoq and M. C. Petit, showing the temperature as ascertained by seven different observers.

The column A is that given by M. Lassonne on the 10th of July 1750. The column B is that given by M. Desbret on the 27th of August 1777. The column C is that of the temperatures obtained by MM. Berthier and Puvis on the 3d of June 1820. The column D is that of the temperatures observed by M. Longchamp during his abode at Vichy nearly at the same period. Column E presents the results in five springs obtained by M. D'Arcet in 1825. And F and G show the results obtained by M. Charles Petit in 1837 and 1846 respectively.

	A		B		C		D		E		F		G	
	1750.		1777.		1820.		1825.		1825.		1837.		1846,	
	C.	F.	C.	F.	C.	F.	C.	F.	C.	F.	C.	F	C.	F.
Great Basin of the Baths,	48.75	119	46.25	115	45.	113	44.88	112	46.	114.8	45.	113	45.	113
Chomel,	43.13	109	36.25	97	40	104	39.26	102.5	41.5	106	44.	111	40.	104
Grand Grillé.	48.75	119	40.63	105	38.5	101	39.18	102.4	40.	104	37.	98.6	32.	89.6
Acacias,	31.25	88	28.13	82.5			27.25	81.2			26.	78.8		
Lucas,							29.75	85			28.	82.4	28.	82
Hospital,	36.25	97	36.25	97	35.	91	35.25	96	36.	96.8	32.	89.6	32.	89.6
Celestins,	27.5	80	22.19	72			19.75	67	17.5	63	10.5	50.	13.	55.4

The numbers in each column marked C are those of the Centigrade scale, to which all the different observations were reduced by M. Longchamp. The numbers in the second column marked F are the corresponding degrees in the scale of Fahrenheit's thermometer.

Two other sources, the *Brosson* and the *Lardy*, are mentioned by M. Charles Petit as having been examined, the first by M. Batilliat and himself, the second by MM. Francois and Batilliat. Both these springs were obtained by means of Artesian perforations. The *Brosson* is situate near the garden of the thermal establishment; and the *Lardy* is in the enclosure of the *Celestins* Convent. The *Brosson* spring, examined for several months, gave a temperature of 22·5 to 23° or 73° Fahrenheit. On the 26th September 1849, M. Charles Petit found it to be 24 C. or 75.2° Fah. The *Lardy* spring, examined on the 8th March 1845, by MM. Francois and Batilliat, was found to be 18·65° C., or 64·8° Fah.; and on the 20th September 1849, 25·10° C., or 77° Fah. All these several numbers show either that the instruments and scales vary, or that the temperature of the same spring is not at all times the same. It seems, above all, difficult to account for the great difference of temperature in the Chomel in 1837 and 1846, the difference being not less than seven degrees on Fahrenheit's scale; and equally difficult to account for the difference in the temperatures of the *Grand Grille* and the *Celestins;* the latter being several degrees warmer in 1846 than it was in 1837.

The difference between the temperatures of the *Grand Grille* and the *Chomel* well, as furnished in 1837 and 1846, M. Charles Petit explains in the following manner.

Both of these springs, and especially the *Chomel*, depend on that of the *Grand Carré*, which is the most abundant. These springs have subterranean communications with each other; and consequently, when the point of emergence of the *Grand Carré*, the Quadrangular Basin, is depressed, the other two springs, its neighbours, are also lowered and become less copious. In this instance, when the lowest connection of the Great Quadrangular Basin is loosened, the Chomel spring entirely disappears. In 1837, when M. C. Petit took the temperatures of the *Grand Grille* and the Chomel springs, that of the Great Quadrangular spring was allowed to rise in a massy square basin of masonry to the height of one metre and 72 centimetres above the surface, that is, about three feet four inches English. The other two springs were at that time exceeded by the column of ascent of the water of the Quadrangular Basin; they underwent pressure from that spring; and the result was, that they came to the surface in a stream more copious, more rapid, and capable consequently of retaining a higher degree of heat. In order, however, to be able to supply the demands of the baths, it was requisite to procure a larger amount of water from the Quadrangular Basin ; and with a view to this effect, it was requisite to lower the point of emergence; and from this circumstance it results that the *Grand Grille* and the Chomel spring give a little less water, and that their temperature is a little lowered. It is nevertheless possible, by elevating the point of emergence of the Great Quadrangular Basin, which is done every morning when the patients drink the water, to restore to the two other springs the quantity of water and the temperature which they previously possessed; and the engineer of the thermal establishment, M. Francois, hopes, that he shall be able, when all causes of waste shall terminate, without diminishing the quantity of water actually furnished by the Grand Carré, to allow this spring constantly to rise to the height to which it formerly rose.

It may be remarked, also, that the relations of temperature between the springs have varied independently of the difference of instruments. M. Longchamp observes, that it is probable that Lassonne, when he took the temperatures of the different springs in 1750, employed the same thermometer; and notwithstanding this he found the same degree, namely, 48.75° Centigr., presented by the *Grand Grille* and the *Grand Carré* basin ; whereas, subsequently these two sources have always presented different degrees of temperature.

If we presume that the thermometrical observations were accurately made, and with instruments graduated with reasonable precision, it would follow as an inference, that the waters of Vichy are undergoing a process of cooling ; since in the course of one century they appear to have lost from four to five degrees of their temperature. It will subsequently appear that this is not an improbable inference, though it is impossible to make it rest solely on the evidence of mere thermometrical observations, taken as those usually are at thermal sources.

M. Lecoq thinks that, if all the waters of the Vichy springs were collected in one basin, it is probable that, notwithstanding the inevitable losses of heat, the mass would still possess a temperature of more than forty degrees Centigrade, or one hundred and four degrees on the scale of Fahrenheit. In order, however, to heat so large a body of water to this temperature, it would require the daily consumption of about two thousand kilogrammes of charcoal, or two thousand three hundred kilogrammes of Auvergne coal, or four thousand seven hundred kilogrammes of ordinary wood, which contains 20 per cent. of water. If these quantities be multiplied by 365, the number of days in one year, the result will show what an immense mass of combustible material would be required to produce the effect, which at present is produced by the heated materials in the interior of the globe. If the wood-charcoal be estimated at 5 centimes per kilogramme only, the annual expense would amount to 36,000 francs, or L.1440 sterling.

The French government are the proprietors of the springs and baths of Vichy, and it was principally by their funds that the present building was erected, and the other measures of collecting the springs and streams were carried into effect. The government let the baths and springs to contractors and lessees, who pay an annual rent, which M. Lecoq considers high. This, in its turn, raises the expense of baths and douches to visitors; and when the expenses of travelling to and from Vichy, of residence in hotels, and of attendants, are taken into consideration,—not omitting doctors' fees, nor the sums spent by curious and healthy visitors, who drink not one drop of the waters, he arrives at the conclusion, that Vichy forms the centre of a considerable expenditure of money.

Expensive, however, as residence at these springs may be, it is assuredly of indispensable importance that their waters be carefully collected, and economically as well as serviceably distributed. Previous to 1787, they were not collected in a proper manner; and visitors could neither conveniently obtain baths, nor be quite sure of clean water for drinking. Previous to the date now mentioned, there was a small building called the King's House, in which the waters of the *Grand Puits* and the *Grand Grille* were collected. Under these unfavourable circumstances, nevertheless, the beneficial influence of the waters, and perhaps, it may be added, of the climate and residence amidst beautiful scenery, was so great, that Vichy often was visited by persons of note, as well as by the masses. Flechier, afterwards Bishop of Nismes, the distinguished orator, visited the place when young; and it was more than once visited by Madame de Sevigné. In 1787, the royal princesses, Mesdames Adelaide and Victoire, resorted to it for the benefit of their health; and it was then that a new thermal establishment, upon an extensive and improved plan, was projected. These distinguished ladies are said to have aided, both with advice and pecuniary means; and their names, inscribed on the portico of the new building, still commemorate, in a slight degree, the intentions entertained. The evil days, however, of France and the royal family, came; and the calamities in which all its members were involved, suspended for a long time the progress of the buildings, and, it is said, rendered abortive for years the original plan. At length, in 1814, the Duchess of Angouleme came to Vichy, and she effectually contributed to the construction of the fine building, with which Vichy is now embellished. This lady enlarged the plan of her relatives; she assisted in laying the foundation-stone; she supplied funds for its construction; and she provided the invalid poor with the means of gratuitous admission into the Hospital.

The building, thus constructed, is supposed to be the finest thermal establishment in France. The south front, directed to the garden in which the edifice stands, is more elevated than the rest, as there are two floors or stories above the pavement. The lower consists of a peristyle, which opens into the garden by seventeen arcades, and which communicates, by means of a long central gallery, with all the other parts of the building. On the north is another gallery, under which are placed the two principal sources employed in supplying baths, douches, &c., namely, the *Grand Carré* and the *Grand Grille*. Between these galleries are two rows of lateral buildings, in which are contained the bathing cabinets, the douches, and the reservoirs. This, which is the essential portion of the building, is large, and occupies a space of seventy-six metres long, or 251 feet English, by fifty-seven metres, or 188 feet 6 inches English, broad. The cabinets of the baths are in number seventy-two. There are further four cabinets for douches; four stoves for warming linen and towels; and four boilers.

A sort of subsidiary, or additional establishment to the large edifice, is situate at the other extremity of the garden. This is a small building so placed that it is near the Hospital, and receives part of the waters which it requires from the fountain situate in the *Place Rosalie*, which, it will be remembered, belongs to the Hospital. In 1819 several bathing cabinets and a small saloon were constructed in a portion of the garden of the Hospital.

High temperature, though an element not unimportant in the waters of Vichy, is not the principal one. They contain a considerable amount of saline ingredients, with lime and arsenic, and so large a predominance of fixed alkali or soda, as to give them the character of decided alkaline waters. These waters, seen at any of the sources, especially the *Grand Carré*, present the phenomenon of boiling and brisk effervescence to so great a degree, that they are often supposed to be of higher temperature than they actually are. This is owing to the presence of gas in considerable proportion, which is incessantly escaping. In most mineral springs this gas is carbonic acid; in those of Vichy it is also carbonic acid, which is in excess, though united with soda and with lime; but there is further a certain proportion of atmospheric air, or rather, a mixture of azote and oxygen, in such proportions, however, that the oxygen is found in much larger amount than in the atmosphere.

It is still unascertained what is the proportion of gas extricated compared with the volume of water. Though it is stated as ascertained, that from the *Grand Grille* more gas than liquid is discharged, yet M. Lecoq is convinced that the quantity of gas is much less, and he is satisfied that such is the case with the *Grand Carré* spring, in which the volume of gas is very far from being equal to that of the water.

The waters of the different springs of Vichy were subjected to careful analysis in 1825, by M. Longchamp, by order of the French government; and the results which he obtained are embodied in the following tabular view.

Substances contained in the Waters.	NAMES OF THE SPRINGS.						
	Grand Grille. Per litre.	Chomel. Per litre.	Grand Carré. Per litre.	Hospital. Per litre.	Acacias. Per litre.	Lucas. Per litre.	Celestins. Per litre.
Carbonic acid,	0·475	0·499	0·534	0·494	0·649	0·540	0·562
	Gram.	Gram.	Gram.	Gram.	Gram.	Gram.	Gram.
Carbonate of soda,	4·9814	4·9814	4·9814	5·0513	5·0513	5·0863	5·5240
Carbonate of lime,	0 3498	0·3488	0·3429	0·5223	0·5688	0·5005	0·6103
Carbonate of magnesia,	0·0849	0·0852	0·8867	0·0952	0·0972	0·0970	0·0725
Muriate of soda,	0·5700	0·5700	0·5700	0·5426	0·5426	0·5463	0·5790
Sulphate of soda,	0·4725	0·4725	9·4725	0·4202	0·4202	0·5933	0·2754
Oxyde of iron,	0·0029	0·0031	0 0066	0·0020	0·0170	0·0029	0 0059
Silica,	0·0736	0·0736	0·0726	0 0478	0·0510	0·0	0·1131
Total,	6·5351	6·5351	6·5327	6·6844	6·7461	6·6678	6·9802

The following table gives the results of analyses made in 1848 by M. O. Henry of three of the Vichy springs; one of the old ones, namely, the *Grand Grille;* and the new ones already noticed as having been obtained by means of Artesian perforations.

Mineralizing Principles.		Grand Grille.	Brosson.	Lardy.
Azote,		Unappreciable.	Unappreciable.	Unappreciable.
Free carbonic acid per litre,		0·231	0·272	0·501
		Grammes	Grammes	Grammes
Anhydrous bicarbonates of	Soda,	4·900	4·840	4·137
	Potass,	traces	traces	traces
	Lime,	0·107	0·094	0·277
	Magnesia,	0·065	0 057	0·210
	Strontia, Lithia,	traces	traces	traces.
Anhydrous sulphates of	Soda,	0·469	0 440	0·170
	Potass,	0 020	0·004	0·020
Chlorides of	Sodium,	0·538	0·500	0·358
	Potassium,	0·004	0·003	0·022
Ioduret, Bromide,		perceptible	perceptible	perceptible
Silicates of	Soda,	0·400	0·340	0·120
	Alumina,	0·200	0·233	unappreciable
Iron and manganese,		0·001	0·001	0·001
Azotized organic matter with confervæ,		traces	traces	traces

In this table it may be perceived that several new substances are mentioned as present in these waters; namely, iodine, broine, lithia, strontia, and silicates of soda and alumina. In addi- on to these, it was mentioned in volume seventy-fifth, that MM. hevallier and Gobley had recognised the presence of arsenic minute though appreciable quantities in six of the old springs, d among the new, in the *Lardy* spring. All of these substan- s are indeed in very minute proportions, so infinitesimal that M. etit thinks it impossible, in speaking of the action of the waters, to preciate their effects. This inference, of course, the homœopa- ic physicians will not only not admit, but, if they be consistent, ey ought to maintain that the presence of these substances must roduce some, perhaps considerable, influence, and that any cura- ve results must afford arguments of the truth of their hypothesis.

Before entering on the subject of the physiological and thera- eutic effects of these waters, it may be proper to direct attention enerally to their chemical constitution.

The first, and manifestly the most abundant, and consequently he most efficacious ingredient in these waters, is the mineral lkali, soda. The quantity is evidently very considerable, espe- ially in the four springs of the Hospital, the Acacias, the Lucas, nd the Celestins, being from 5 grammes to 5½ grammes in the litre; hat is, from 77 to 85 grains troy in every imperial pint and two-thirds, or 61 cubic inches; or one ounce of soda in ten imperial pints of water. The next abundant article is hydrochloride of sodium, or common salt, which is to the amount of rather more than half a gramme in the litre, or 7·7 grains in every imperial pint and two-thirds. Next come sulphate of soda or Glauber's salt, carbonate, or rather supercarbonate of lime, and supercarbonate of magnesia, in proportion, in the order now mentioned; next silica, or silicate of soda; and lastly follows oxide of iron, probably with arsenic, as is usually the case, and, according to the recent analysis of M. O. Henry, certainly with manganese.

Another mode of forming an idea of the amount of mineralising ingredients in the waters of Vichy is taken by M. Lecoq. Each cubic metre of water, he observes, contains about fifteen kilogrammes, or thirty pounds of solid matter. Every day there is discharged a volume of water equal to 259 cubic metres. Now, by multiplying these two numbers, the product is 38,000 kilogrammes daily, or thirteen millions eight hundred and seventy thousand kilogrammes annually. It is not very easy for the imagination to comprehend quantities so great.

A natural sentiment of curiosity among all reflecting persons, whether visitors at these waters or only hearing of them, is to inquire whence can proceed waters so remarkable for the steadiness of their volume, their high temperature, and their complicated composition. The consideration of this question involves of course the general question of the origin and causes of mineral waters; and on this point M. Lecoq gives the views which are now most commonly entertained by physical inquirers. These we can give only in the most abridged manner possible.

Astronomers have proved, in the most evident manner, that the earth, in order to take the spherical or spheroidal figure which it is known at present to possess, must have been originally in a liquid state. This liquid state could be produced only by one of two agents, fire or water; and the latter may be completely excluded, as inadequate to produce the effects, at least at great depths. The only probable inference, indeed, is, that the earth must have been in a state of fusion and incandescence, in order to give all its component parts their necessary fluidity. Cooling of this mass, however, would speedily commence, though only at the surface; and the cooling process would gradually penetrate to some depth, so that a cold solid crust being formed over the whole surface, would cover those deep-seated and central materials which, he argues, must still be in a state of fusion and incandescence. The strongest proof of all this is the existence, in ancient ages, of volcanoes, which are now extinct, the gradual cooling of thermal mineral waters, and especially the circumstance ascertained by many observations, that in deep mines the temperature becomes high the deeper the observer descends. The temperature taken in mines at great depths, he thinks, gives reason to believe that the fixed or cooled crust of the earth is at an average from about twenty to twenty-five leagues, or between sixty and seventy-five miles. According to the calculations of Mr Hopkins, the thickness of the solid crust of the globe must, at the least, approach to four hundred miles, and probably does not fall short of eight hundred or one thousand miles. It is certain that the water procured from very deep Artesian wells has a temperature much higher than that which is obtained at the surface. All thermal mineral waters must be allowed to proceed from the close vicinity of materials in a greatly heated state, and they must be regarded as proceeding upwards through crevices and fissures of the strata, incumbent on the heated materials, exactly as volcanoes are to be viewed as the upper outlets of long chimneys arising from the central heated or incandescent materials of the globe.

Does this hypothesis explain equally the presence of the saline and other ingredients in mineral waters? Does it account for the large amount of soda, the proportions of lime, and the various saline ingredients? All that M. Lecoq says upon this point is, that the bicarbonate of soda, the muriate and sulphate of soda, the lime and the carbonic acid, must proceed from great depths, exactly as do the highly heated waters; in other words, the heated waters can bring up only those soluble and dissolved materials with which they came in contact.

It may be proper here to observe, that Dr Daubeny infers from various circumstances that thermal waters, holding in solution carbonate of soda, proceed from the vicinity of granitic chains, from the felspar of which he thinks they derive the soda.*

It is almost superfluous to remark, that, as those waters come to the surface, the carbonic acid escaping, is no longer capable of keeping the lime in solution; and this earth is accordingly deposited most copiously in the form of Arragonite, not only in the course and neighbourhood of the thermal springs of Vichy, but over many points of the Limagne, and wherever deep-seated springs come to the surface.

Baregine, an azotised vegetable substance, is an element which is found in these waters, in common with those of Bareges and several other thermal mineral waters. At Vichy it appears at first as a colourless and soluble matter, then assuming successively the form of filaments, which speedily acquire a green colour, which are grouped and united so as to form those green pellicles which float on the basin of the Hospital spring at Vichy, and which are also abundant in the basins of Neris. This green matter, in the state now described, has been by some botanists considered as a plant, and described under the name of *Tremella Thermalis.* It is indeed a fact that this substance is rarely seen to be developed in abundance, and with its beautiful green colour, except in hot springs. Almost no traces of it are at present found in the water of the Celestins; and nevertheless several fragments of Arragonite, taken from behind this spring, present internally the characteristic green colour in good preservation. This is easily destroyed by fire, and its presence bears testimony to the high temperature which this spring formerly possessed. The same observation is made as to the waters of Tambour, near which also are Arragonites green coloured by the same material.

Much discussion has taken place regarding the origin of this organic matter which escapes from the interior of the earth. Its formation has been ascribed to the presence of the azote, which exists in most of these springs; but it is not difficult to perceive that the converse may be the fact, and that the azote may proceed from the decomposition of the Baregine. Whatever opinion is adopted, M. Lecoq thinks that it must always be difficult to explain the presence of azote or an azotized material in water, which is regarded as the result of the condensation of vapours which issue from the interior of the globe.

An inference, not altogether unimportant, which results from the known history of the waters of Vichy, and which is at once applicable to that of several thermal springs, and receives confirmation from the facts of these springs in general, is, that not only is their temperature undergoing a secular depression, but they are becoming less abundant, and some threaten to be dried up. M. Lecoq concludes, that the time will come when the waters of Vichy, after being long cooled, will cease to flow; and if the human race continue at that time to exist, it will merely know these baths, and the waters by which they are supplied, as matters recorded in history.

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* A Description of Active and Extinct Volcanoes, &c. 2d Edition. London, 1848. 8vo, pp. 14.

Part of this result must be regarded as the natural effect of the gradual cooling of the materials forming the deep portions of the crust of the globe; but part also must be the effect of another cause, namely, the filling up and obstruction of the courses of these waters by deposits of carbonate of lime. Wherever lime is contained in these waters, both as the temperature falls and the waters approach the surface, the lime, no longer retained in solution by the carbonic acid which is incessantly escaping, is deposited on earth, on the remains of vegetable and animal bodies, and thus contracts and fills up those crevices and rents by which the waters arise to the surface. This inference may be said to be demonstrated at Vichy. The spring of the Celestins is not only colder than it was, but it is less copious; and all round where its waters flowed are copious deposits of carbonate of lime in the form of Arragonite. The conduits of the Hospital spring are annually lined with so large a quantity of carbonate of lime, that they would long ago have been closed and obstructed, if precautions were not taken to clear it away, and keep the tubes pervious. This obstruction has taken place with many springs in Auvergne. These waters have formed at their place of issue an enormous covering of concretion, and having no longer the strength to raise it, the waters have ceased to flow.

Meanwhile this apprehended occlusion of these springs is not likely to take place during the lifetime of the present generation; and we find that neither physicians nor patients have entirely relinquished hopes, that the waters of Vichy may still be serviceable in the treatment of disease. Of late years, indeed, considerable attention has been directed to them as remedial agents, not only by the government but by various scientific bodies, as well as by individuals. From the circumstance that these waters have been much recommended for the treatment of gout, gravel, and urinary calculi, various questions have arisen, not only as to their actual merits and therapeutic powers in these disorders, but also as to the question of their utility in several other maladies for which they have either been alleged to be beneficial, or have been more or less strongly commended as certainly sanative. One party of medical authorities, chiefly chemical and chemico-physiological, have strongly espoused the cause of the Vichy waters, and have represented them to possess great efficacy in the relief and cure of gouty disorders, and all cognate affections. Others, either less confident, or not willing to be influenced by the general voice, have expressed, in terms more or less decided, doubts as to the utility of the waters. Not a few have endeavoured to extend to a wider sphere than heretofore the therapeutic claims of these springs; and have represented them to be useful in various diseases in which they were not previously believed to have therapeutic powers. Others, again, more cautious, and desirous to evince more discrimination, while they are willing to recognise a certain form and degree of therapeutic efficacy in some morbid states incident to the human frame, are not willing to admit this efficacy to be equally marked in all diseases. Another order of opponents have naturally said, that if these waters are beneficial in any given class of diseases, then the same benefits ought to result from the use of waters made accurately to imitate the waters of Vichy; and as factitious Vichy waters are prepared not only in Paris but in Berlin and various other continental cities, and also in Brighton, the same beneficial results ought to be obtained from the employment of these factitious waters, at a distance from the springs, as from that of the waters at Vichy. Various reasons might probably be adduced to show the imperfection of this as an argument against these waters; and some it may be necessary to consider.

On this point it may be proper to say that the answer given by M. Charles Petit seems entitled to great attention. Though these waters, he observes, are essentially alkaline, yet the other elements which they contain in minute proportions cannot be supposed to be without effect, either in modifying the action of the soda, or in producing upon the system substantive changes by themselves. Whether this be the fact or not, he has observed, that in administering bicarbonate of soda, with the view of supplying as far as possible, at a distance from Vichy, the want of the natural waters, which could not be procured, he never could obtain from this salt the same effects, nor effects as prompt and certain, as from the employment of the natural waters, taken at the source; and that in general, patients endured the use of the alkali neither in the same amount, nor for so long a period, without the stomach being disordered a great deal sooner than in drinking the natural waters. Meanwhile all these difficulties and questions have contributed to invest the subject with considerable importance, both to physicians and invalids.

In order to explain the physiological principles, and show the actual advantages, of this method of cure, M. C. Petit enters into sundry explanations, of which the following is a summary.

The blood and all the liquids of the human body, excepting the secretions of the skin and the kidneys, always present in the normal state though in different degrees, an alkaline character; while the secretions of the skin and of the kidneys, which are acid, are excrementitial, that is to say, intended by nature to be eliminated.

One excretion alone, manifestly acid, is not excrementitial; this is the gastric juice. But he observes, that the liquids secreted by the stomach assume a marked acid character only at the periods of digestion; and that this acid quality which they at that time possess is given them with the purpose of performing a function quite peculiar, as a condition necessary to one of the most important processes of digestion.

Does not this seem clearly to show, he asks, that the presence of alkalis in the blood in a certain proportion is always necessarily indispensable to the maintenance of the phenomena of life? Ought it not to be believed, from the care which nature takes to evect the acids, in proportion as they are formed by the metamorphoses which are going on in the organs, in consequence of the chemical action which is established between them and the blood which enters these organs, that if the acids are not ejected, agreeable to the purpose of nature, or are inadequately eliminated and left in the fluids, health may thus be impaired?

Since in animals, says M. Mialhe, the principal fluids are in general alkaline,—since the reactions which are daily taking place in the animal economy, proceed, for the most part, in an alkaline medium,—it is incontrovertible, that if these fluids change their nature, if they become neutral and especially acid, considerable dynamic disorders will infallibly arise. In the presence of acids or only in the absence of alkalis, the wonted chemical phenomena will not be produced in the same manner. The process of nutrition will no longer accomplish the necessary transformations; all the vital liquids, the composition of which is then so opposite to their normal state, will no longer be capable of determining the interstitial changes,—the intimate modifications which they are intended to produce within the substance of the organs. The system, unable to endure this condition, will at first struggle against it, but very soon yielding to this general encroachment, debility and emaciation will ensue, conjoined with formidable diseases, which it will not be easy to overcome, if the acids predominate long.

Does not observation, indeed, teach us that the want of a sufficient amount of alkaline impregnation, or the presence of a certain degree of acidity in the fluids, is incompatible with a good state of health? Is it not consequently more important than is generally believed, especially when doubts are entertained upon the nature of certain disorders, to be satisfied whether the secretions are more or less acid or alkaline? We have further, for this purpose, means of appreciation very simple, very easily employed, and which may frequently throw some light upon the remedial measures most proper to be recommended. Whenever, for example, the secretions of the mouth become acid, passing from their alkaline, or neutral, and normal state, independently of the corrosive action which this acidity of the saliva exerts upon the teeth, and of the morbid state of the gums thus induced, this forms a certain indication of other disorders in the functions. Most commonly in this state the stomach is diseased, and secretes an excessive quantity of acid; and then patients are wont to complain of a sensation of acidity and corrosion in the stomach, which sometimes extends to the throat and mouth, while the process of digestion is disturbed, performed with pain, and sometimes not performed at all. This excess of acidity is not confined to the disturbance of the digestive processes; the organ itself suffers from the contact of its own unhealthy secretions, which cannot be without influence in the development of some of these severe lesions, which its walls occasionally present, while the blood and the system at large also suffer.

The author thinks it not unreasonable to ascribe to this morbid state of the fluids various severe changes in the textures; and he is favourable to the idea entertained by Lorry, that cancer, *mollities ossium*, and rickets are all dependent upon the presence and operation of acids in the system; and to that proposed by Bordeu and some other authors, that scrofula depends on the presence of an acid acrimony.

These views he also corroborates by one brought forward by Mialhe, who ascribes the formation of tubercles and glandular swellings to an acid predominance in the fluids. This physiologist, who attaches great importance to chemical actions in the living body, maintains, that if we are to admit that the chemico-physiological study of the fluids in general, and of the blood in particular, is incapable of furnishing practical applications to medicine, we are unable to explain the operation of various antiscrofulous agents, the efficacy of which he presumes to be established, such as bicarbonate of potass, of soda, and ammonia, acetate of potass, ioduret of potassium, and similar remedies.

The conclusiveness of this reasoning may be doubted. At all events, experience shows that mere chemical remedies do not, in all instances, afford benefit; and though antacids have, in some cases, appeared to be beneficial, yet, as they do not alone, or in all cases of scrofula and tubercular diseases, effect cures, it is certainly not quite logical to deduce regarding their utility and action positive conclusions.

It may be further observed, that several of the inferences of M. Charles Petit, as to the presence of acids in the stomach and their influence on other parts, ought to be admitted with caution. We have so often directed attention to this point, that we feel unwilling to spend more time on it; and, therefore, we refer to what has been said in volumes seventieth and seventy-second, with this addition. If the gastric fluid require for its solvent powers the presence either of an acid, as the hydrochloric,—or chlorine, then the administration of alkalis, such as soda, potass, or ammonia, cannot fail to destroy some of this acid power and reaction. In this manner, therefore, the use of alkalis may be detrimental, by enfeebling the solvent power of the gastric juice; and the food in that case will not be digested.

Both the late Dr Prout and Sir Benjamin Brodie have expressed doubts of the propriety of giving soda in many supposed affections of the stomach and of the system, in circumstances in which it is supposed that acid predominates. According to Dr Prout, the ingestion of soda merely causes a fresh secretion of acid, so that the vessels of the stomach are excited to secrete more acid than they would do without the ingestion of the soda. According to Sir Benjamin Brodie, soda is highly injurious in those states of the system in which there is a tendency to the deposit of lithate of soda; that is, in gout, in rheumatic gout, and in urinary calculi. Lastly, Dr William Gairdner, one of the most recent authorities, maintains that the utility and efficacy of the alkalis, as means of neutralising or eliminating uric acid in gout and the gouty diathesis, have been greatly overrated; and he expresses the opinion that these alkalis are, for this purpose, much inferior to the neutral salts, especially those formed from the vegetable acids.

Dr C. Petit, however, must be allowed to explain his own views.

This physician maintains that his ideas on the detrimental effects of acids upon the animal economy, when not regularly and adequately evected by the cutaneous secretions, receive confirmation from the fact that in prisons and similar situations the most severe chronic diseases are endemic. Young females, he observes, brought up in hospitals and similar charitable establishments, where they live without bodily exercise, engaged only in needlework, become pale, wasted, and often rickety, scrofulous and phthisical, after having been chlorotic and leucorrhœic. Among the animals kept in menageries tubercular disorders are very common. Now, in all these conditions of existence, the influence of inaction on the cutaneous functions, of the slow and gradual suppression of the insensible transpiration,—in one word, of the retention of the acids in the fluids,—is too manifest to admit of being called in question. And if to these effects of an inactive life, those of humidity are conjoined, he thinks it is not difficult to see that the most dangerous diatheses, the most formidable diseases, the most numerous deformities, may be developed, and death itself may often follow.

A good deal of this savours of general and perhaps vague declamation. The following facts are therefore added. The cows shut up in stalls and cow-houses, as is practised in Paris, furnish almost always milk acid or very little alkaline; and these animals, it is known, become in such situations almost always affected by tubercles. Those, on the other hand, which live in the open air, and on good pasturages, usually furnish milk possessing well-marked alkaline characters, and enjoy excellent health. He has also observed that infants, whose nurses furnish alkaline milk are either never or seldom affected by vomiting; that these infants digest, in general, perfectly well; and that their health is almost never disordered. Those infants, on the contrary, who are nursed on milk which is either acid or very feebly alkaline, vomit this milk almost immediately, either in coagulated masses more or less bulky, or they suffer various disorders of the stomach and bowels, all of which are to be traced to the bad state of health of the nurse. In this manner many sucking infants are attacked by colic pains, diarrhœa, and wasting; and if, under these circumstances, the milk of the nurse be tested by means of turnsol or litmus paper, it evinces a decided acid reaction. For these symptoms, changing the nurse is the most effectual remedy; next to this, changing her mode of living; and in the case of infants brought up, as is said, by hand, he recommends the use of bicarbonate of soda, added in minute quantities to the milk.

All these statements, he allows, would require to be well ascertained and confirmed by correct and precise facts. But if, he adds, it be demonstrated, that the presence of acids in the system is productive of various hurtful consequences, the propriety of forbidding the use of acids, and recommending, on the contrary, the employment of alkaline drinks, is manifest.

On this point we have merely to say, that it would be desirable that M. C. Petit should consider carefully the accounts which are given in the seventy-third volume of this Journal (p. 236), of the effects of lemon juice in the cure of rheumatism and rheumatic gout. And this we say, not that we think that the use of acids cannot be explained; but because we believe that physicians should not be too exclusive in reasoning upon mere chemical principles; and because various facts show that even the use of acids taken into the stomach, not generated within that organ, may, in certain circumstances, prevent the formation of acid, and all its alleged bad consequences. It is well known that the use of various acidulous fruits has the effect of rendering the urine alkaline, and this they must do by previously rendering the blood alkaline. It is also undoubted that the food which the lower animals consume, ought, according to the reasonings of many persons, to render their fluids, blood, and urine acid; for succulent vegetable aliment, it is argued, is much more acidifying than animal food and food from the cereal grains. Yet the fact is, that these animals, if allowed moderate exercise and fresh air, digest well, and rarely suffer from the effects of acescent diet. Conversely, acid and its effects are most troublesome in human stomachs, where animal food is taken in large quantities; and it has never yet been proved that gout and stone are the results of living upon vegetable diet, or the moderate use of mixed diet. The truth is, that it is chiefly when quantities of food, too large to be immediately acted upon by the acid or chlorine secretion of the stomach, are taken into that organ, that new acids, lactic, and probably others, are generated there; and when the materials so unchanged are either too long delayed within the stomach, or not periodically ejected from the intestinal tube, then acid is habitually formed, and produces its characteristic hurtful effects. It is not, therefore, solely the use of alkalis, which act on the mere effect, that can cure this bad habit; but it must be a thorough changing of the whole mode of living, and, above all, diminishing the amount of food to the powers of the stomach.

M. Petit, nevertheless, argues not, in estimating the effects of the Vichy mineral waters, from their exclusive chemical character and action alone. It is requisite, he adds, to take into account the action which they exert upon the vitality of the organs,—an action which, he thinks, depends both on the temperature at which they are employed—perhaps even the particular nature of this temperature—and the impression, more or less strong, which their mineralising principles produce upon the mucous membranes and the skin, from which proceeds a degree of excitement, more or less strong, which is propagated by many sympathies to the entire organism.

In this complex action of the waters of Vichy in chronic disorders, when they are properly employed, and in suitable doses, it is usual to observe a very remarkable sedative effect, an effect which, he thinks, corresponds to the contra-stimulant of the Italian physicians. In patients who, on their arrival at Vichy, present a degree of sensibility, more or less marked, either at the epigastric, or in the hepatic region, or in some other part of the abdomen, according to the organ affected, it is remarkable to observe this sensibility gradually subsiding, while, at the same time, the functions of the affected organs return to their normal state.

The essential and most marked effect, however, which the waters of Vichy produce, while at the same time they neutralize the predominant acids which are observed in certain disorders, is, to render the blood more liquid; and it is precisely because these waters are alkaline, and contain bicarbonate of soda in large proportion, that they produce this effect on the blood; that they are liquefying, antiplastic, and, according to the language of the old pathologists, deobstruent, that is, solvent and resolvent agents.

The actual phenomena observed to ensue under their use are the following.

When the waters of Vichy are administered in drink, or by baths, they are easily absorbed, and immediately conveyed, by the circulation, into all the organs, and into the substance of the tissues; and the experiments of M. D'Arcet and those of M. Chevallier, and many facts collected by the author, show that these effects are speedily manifested, especially by the modifications which the fluids undergo; a fact of which it is easy to obtain proof by examining the urine and the cutaneous transpiration, which speedily acquire alkaline properties.

These experiments show, that though one glass of the thermal water of Vichy, containing about one gramme, = 15·44 grains of bicarbonate of soda, taken fasting, does not alkalinize the urine, yet two glasses, containing about 30·88 grains, do so; and the urine is alkaline and clear for seven hours afterwards. Three glasses, = 46·33 grains of bicarbonate, render it alkaline for twenty-four hours; and four glasses, = 61·776 grains of bicarbonate, taken daily, keep it constantly so. If five glasses, = 77·220 grains of bicarbonate, are taken daily, and if the patient, at the same time, bathes daily, the urine is alkalinized during the whole time that he takes the waters, that is, for thirty or forty days in succession.

Since, however, the normal state of the urine is acid, and, it may be argued, that the constant alkalinization, being unnatural, might be productive of evils, M. Petit further adduces from M. D'Arcet the following facts.

In the manufactories in which soda is extracted from crude soda, there are workmen who spend their lives in braying, sifting, and packing the salt of soda. This salt, on being brought out of the furnace, is reduced into powder and sifted, when still very hot; the laboratory in which this operation is performed, is usually very close, in order to prevent loss of the material, which braying and sifting carries into the air in so great a quantity, that the surface of the walls and the clothes of the workmen are very soon quite covered by it. These workmen spend in this laboratory ten hours daily, and as they take no precaution, must there breathe and swallow a large quantity of the salt of soda. M. D'Arcet conducted a manufactory, in which were prepared so much as one thousand kilogrammes of salt of soda in twenty-four hours. Several of the workmen, who laboured there for between six and seven years, having been interrogated on this point, all declared that they experienced in it no inconvenience; that they felt there a greater degree of hunger, and felt it earlier, than in the other apartments of the manufactory; that their bowels were in general rather constipated than relaxed, but that in this state they underwent no constraint. M. D'Arcet further ascertained that the urine voided by these men was seldom acid, and, on the contrary, almost always very strongly alkaline.

Thus it appears that the urine, which is usually acic
become strongly alkaline, and be continued for whole mon
that state, not only, as long experience shows, without caus
convenience or any accident, but contributing, on the othei
to welfare and the re-establishment of health.

The action which the baths of the thermal waters of Vich
upon the skin, proclaims itself only by a slight excitement,
determines the blood to it, and slightly reddens it ; and thi
is perceptible only when the baths consist of undiluted wat
when the bather remains in the water some time. The sk
becomes distinctly red and marbled, but this effect usual
tinues not long after quitting the bath. Certain patients
the skin pricking sensations, and complain, even at the end c
days, that red patches remain, with itching sensations.

Absorption appears to take place with great facility in th
since to render the urine alkaline only one bath is sufficien
out drinking any of the mineral water. This experiment
was first performed by M. D'Arcet, has been often since
peated, especially by M. Chevallier and M. C. Petit.
early experiment, M. Chevallier observed, that during a
pure mineral water, which lasted eighty-nine minutes, the
which was previously very acid, had gradually lost its acidi
become neutral, and at length became quite alkaline. I
experiments, made conjointly with M. Petit, almost alwa
urine became alkaline after remaining about twenty minutes
bath, while in another case it required one hour and a
produce the same result; but in the latter case the urine
nued longer alkaline. It may be understood from this ho
more easily the urine acquires the alkaline character, wh
dependently of one and sometimes several baths, the p
drink several glasses of water in the course of the day;
these experiments show, that absorption not only varies ir
rent individuals, but in the same individual, according to
peculiar dispositions.

In proportion as the urine becomes alkaline, the mucus
is deposited on cooling disappears; the urine eventually be
very clear, and though allowed to be exposed to the air f
or twelve hours, it scarcely deposits any mucus. In other re
the amount of urine is not very perceptibly increased b
method of treatment; at all events, this increase is not u
in patients, and it appears to depend as much on the quan
water drank as on its diuretic qualities.

The waters of Vichy act also on the cutaneous transpi
The perspired matter which, in the state of health, is
acid, excepting in certain parts of the skin, becomes alkali
patients subjected to their action. This takes place gen

subsequent to the alkaline condition of the urine; but, nevertheless, after the lapse of a few days the perspired matter becomes alkaline, and continues in this state, though in a slight degree, provided the patients continue to take nearly the same quantity of water, which is known to be usually necessary, in order to maintain the alkaline state of the urine. This alkalinization appears not greatly to increase the amount of the cutaneous any more than that of the urinary secretion; but, from the alkaline nature of the water, it clears the skin of all its secretions, it opens the pores, and facilitates the functions of the membrane. In some patients in whom this secretion is increased in amount, this depends upon the state of the atmosphere, and the quantity of water which they drink; for in a lower temperature alkalinization does not sensibly increase the amount of perspiration. This, nevertheless, is always sufficiently abundant during the warm season, in order to enable the observer to be satisfied of its acid or alkaline condition. The secretion may even become in a high degree alkaline; and this he has ascertained in some patients, who have the faculty of being able to drink a large quantity of the mineral water without any inconvenience, and even with great advantage to the re-establishment of their health. In these patients turnsol paper, reddened by an acid, immediately passed to the deepest blue, when the paper was moistened by applying it to the skin.

As to the secretions furnished by the mucous membranes, as in the state of health, they are are ordinarily alkaline, or at least neutral, excepting those which are contained in the stomach, more particularly, during the process of digestion, alkaline drinks have upon them an effect greatly less perceptible; yet these membranes are by no means uninfluenced by the waters; and it is easy to be satisfied that they quickly acquire a degree of alkalinity which they did not previously possess. Alkaline drinks appear also to have the effect of rendering these secretions a great deal less abundant, less thick, and less plastic. This at least is ordinarily observed when the waters of Vichy are employed against certain chronic catarrhs, and especially against those of the bladder. Should we ascribe to this property, which the waters of Vichy possess, of diminishing the secretion of the mucous membranes, the diminution in the alvine discharges which is commonly observed in patients using them? This last effect is observed in so many patients, especially when they drink the waters in moderate doses, and at such intervals as admit of easy digestion, that M. Petit thinks it singular that the ancient physicians, as Claude Fouet, should have regarded these waters as purgative and aperient. Against the correctness of this opinion, however, Desbrest expressed himself so long back as 1778; and the experience of the present author leads him to take a modified view of the same

kind. In some instances he has observed the Vichy waters
duce several movements in the course of the day, without,
ever, causing pain or weakness; and a single bath he has obs
to be followed by a similar result. In general, however, h
serves that, when they act as purgatives, it is only in part
circumstances, such, for instance, as the presence of some ir
nal disorder, bad regimen, or because the patient has drank
than the stomach can endure; and even in such circumst
this relaxation is followed by constipation so obstinate, the
use of either of enemata or laxative medicine becomes requi

It is by no means improbable, that when these waters a
laxatives, it is in consequence of the presence of an ur
amount of acid in the stomach and intestinal canal, in c
quence of which a neutral salt of purgative qualities is for
and it is also to be remembered, that as these waters contair
muriate and sulphate of soda, this combination may occasi
act with decided purgative effects.

The Vichy waters evidently exert a very energetic acti
the circulation. They increase not only the activity of the
lary blood-vessels, but also that of the entire lymphatic s
When, for example, patients have ulcers, these usually b
red, painful, and disposed to bleed. The blood seems to a
under their operation a more active expansiveness, and th
energy of the whole capillary system is increased. It is c
account, probably, that they are not suitable in diseases
heart having a certain degree of severity, in pulmonary ca
accompanied with a certain amount of irritation, in phthisic
sons, in patients subject to hæmoptysis, and in general in
diseases of organs which, like the lungs, unite great irrit
with a highly vascular organization. Conversely, their l
effects in the cases of the kind now specified, constitute one
reason why, when employed with discrimination, they f
practical medicine with a powerful remedy for opposing c
disorders, and particularly that numerous and varied class c
ladies having their seat in the abdominal organs. Furtl
the slight excitation which they produce in the vascular s
we should probably ascribe the happy effects by which their
nistration is followed in chlorosis, in disorders of the lym
system, and particularly in the scrofulous distempers of chil

Something in these exceptions there is inconsistent, if n
capable of being reconciled with several current theoretica
trines, and even with what is elsewhere inculcated by M.
It would not be amiss to specify the particular forms o
ease of the heart in which alkaline remedies must be inju
for these remedies are often observed to afford very consid
relief, whether it be by acting on the digestive functions,
being taken into the circulation and changing the crasis

blood. Then as to phthisis, though it is unfortunate that many different and opposite remedies have been reported to be beneficial, yet it is certain, that many physicians have reposed considerable confidence in the employment of alkalis for the cure of that disease. In 1802 Drs Spalding and Barker reported the cure of an alleged case of consumption by the use of large quantities of potash and soda taken for a considerable time. One teaspoonful of soda was taken for a dose; and alkalis were mixed with all the food. The patient had taken in this case nearly two pounds of potass and soda, which, as the authors imagine, neutralized some poisonous acid that irritated the textures of the living body. Then it is to be remembered, that only in 1841 Dr J. S. Campbell published a work on pulmonary consumption, in which he represents alkalis, especially *aqua potassæ,* to be the true solvents of tubercles.* Lastly, it is certain that if tubercular deposits are of scrofulous origin, many respectable physicians have strongly recommended both soda and potass as antiscrofulous agents. All this discordance it would be desirable to reconcile. As to hæmoptysis, if it be an indication that the plasticity of the blood should be removed or diminished, then surely alkaline remedies have an undoubted influence on this operation. All these suggestions are offered to the consideration of the ingenious as well as the candid.

The fluidity and liquescence, on the other hand, which they induce in the blood, renders them unfit and inadmissible in certain morbid states of the system. Emanuel Tardy, who was superintendant of the Vichy waters, about the middle of the eighteenth century, disapproved of their employment in diseases marked by excessive tenuity and dissolution of the blood; and Desbrests, who published in 1778 a treatise on the waters of Chateldon, Vichy, and Hauterive, recommends that they should not be prescribed to patients labouring under scurvy or with a disposition to that disorder; and expressly adds, that they are not suitable in circumstances in which there is ground to suspect an alkaline state of the fluids, or when the blood is dissolved, that is, with imperfect coagulating powers.

The effects which the waters of Vichy produce on the nervous system are infinitely varied. In general, patients easily endure the ordinary dose, which varies from three to six glasses daily, when the digestive passages are not in a state of excessive irirtation, and are not the seat of any acute inflammatory condition. Some patients M. Petit has seen take, in cases in which strong alkalinization seemed to be necessary, as many as fifteen and twenty glasses daily, or even more, independently of one and sometimes two baths, not only without inconvenience, but with great benefit to their health. Other persons, on the contrary, cannot endure the smallest quantity of them, though to all appearance they are in conditions suitable for drinking these waters. In such persons the stomach is instantaneously spasmodically affected, and the waters cannot be digested. These, however, are exceptional susceptibilities, such as are observed in the employment of all remedies, and which it is impossible to foresee. Though these exceptions are rare, they should teach, however, the physician, he allows, to feel his way a little; and when the waters cannot be borne by the stomach, great advantage results from employing the baths alone, which may then be more frequently repeated. In this manner the endermic absorption of the water may be substituted for the internal use, as bathing in them does not, he maintains, fatigue and enfeeble, in the manner in which bathing in common warm water does; and he assures his readers that he has often seen patients preserve and recover strength while bathing daily for several successive weeks, whereas bathing in ordinary warm water reduced the strength so much that it became necessary to give it up.

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* Edinburgh Medical and Surgical Journal, Vol. lvii., p. 467. Edinburgh, 1842.

During the first days of treatment very sensible effects are not in general observed. The patients sometimes complain of a little fatigue in the limbs, of a feeling of weight in the head, of a species of intoxication; or they feel during the day a marked disposition to sleep; this evidently arises, he thinks, from the circumstance that, either at the springs, or in the bath, these patients have respired air loaded with carbonic acid gas, which the waters disengage in large quantity. After the lapse of a few days, when the digestive organs are not very much affected, appetite seldom fails to evince its presence; it may even become so keen that it is difficult to prevent patients from yielding to it completely; but it does not continue in the same degree during the entire time of treatment. After a certain time it naturally subsides; and it may even entirely disappear, if abused.

At a period of treatment a little more advanced, varying, however, according to the susceptibility of patients, the quantity of water drank, and the number and strength of the baths, a certain excitement of the nervous system is observed to arise. Some patients complain of sleeping badly, of having the sleep interrupted and agitated. They experience also pricking and itching sensations in the skin, a sort of general agitation; and very commonly greater sensibility in diseased organs is remarked. This excitement, if it do not proceed further, has in it nothing alarming; and it is probably a necessary condition in modifying chronic disorders, and bring about resolution. Nevertheless, when it has attained a certain stage; when the appetite becomes less active, and especially when patients begin to feel aversion to drink the waters, it is advisable either to put a stop to the treatment, or to suspend it for several days, if it be considered necessary that it should be continued longer. In order to allay this excited state more rapidly, it may be proper for the patient to take baths of common water; this, however, is not usually necessary. The irritable condition subsides spontaneously; and all that is required is rest for a few days. These symptoms of excitement, which, it may be observed, correspond to the bath-fever of the German practitioners, are observed only in a certain number of patients; and in many persons they are scarcely perceptible, notwithstanding the liberal use of the water both internally and by bath.

A remarkable circumstance, he observes, is, that under this system of medication, essentially tonic and stimulating, nervous disorders, especially those having their seat in the ganglionic system of the great Sympathetic, are observed sometimes to be allayed and entirely cured. Among several instances of this which he has witnessed, he adduces the following example.

A young married lady from Moulins, about thirteen months after confinement, was attacked with acute pains in both hypochondriac regions, and after some little time with intermittent fever, which lasted seven months. According to her statement, the ovaries and the spleen had been the seat of considerable swelling, the existence of which the attendant physicians had at that time been enabled to ascertain. The menstrual secretions, which had returned subsequent to delivery, were suppressed during the persistence of the intermittent fever. She came to Vichy on the 4th of July 1844; and at this time all that M. C. Petit could recognise was slight swelling of the spleen. This patient was nevertheless greatly emaciated and exceedingly feeble, and during the last four months she was attacked almost every two or three days with acute pains in the direction of the right ovary, accompanied with violent uterine colics, to which were associated spasms and pains in the whole abdomen. The patient could remain only seated in bed and inclined forward; and this position she kept almost constantly for twenty-four hours, and sometimes longer, as the crises continued, without being able to take anything, not even a mouthful of water. There was no fever. The patient was so weak in the interval of the crises, that she was able to walk some steps only with the support of two persons.

M. C. Petit was desirous to send her away, being almost certain that the waters would be unavailing, if they were not hurtful. The importunity of the patient induced the physician to consent to the trial of a very moderate dose. It became necessary, however, to give up drinking the waters entirely, as even the smallest quantity the patient could not endure. In the baths she found herself comfortable, and these were continued. It is proper to mention that she had often at home tried ordinary warm water baths, which, however, did no good, and the patient even bore them with difficulty. This patient underwent three paroxysms of her disease, during the first days which she spent at Vichy; but afterwards they entirely disappeared. She took regularly two baths daily; and her health was very rapidly re-established. She remained at Vichy till the 28th of August. She was able at that time to walk very easily; had no suffering; ate with appetite, and digested well. By this time she had recovered strength and a great part of her plumpness. The menstrual secretion alone had not returned.

It appears further, that the waters of different springs exert different effects on patients; and experience shows that, in affections apparently the same in nature, the medical action of different waters is different. Of this difference it appears impossible at present to give any satisfactory explanation; and all that is known is, that such is the fact. In illustration of this peculiarity M. Petit gives the following fact.

A patient with peculiar affection of the digestive organs, but in whom all acute symptoms had long disappeared, was under treatment. The waters of Vichy appeared to be fully indicated; and M. Petit prescribed those of the Hospital, which usually agree in cases of this kind, and which patients endure well. This water, however, the patient could not bear; the smallest dose produced the effect of an alcoholic drink, induced extreme irritation, took away all appetite, and caused great uneasiness during the whole day. The drinking was given up; and the patient was directed to use only baths. Some days after, in passing the spring of the *Grand Grille*, he could not resist the desire of tasting the water. He drank, without repugnance, a small quantity which agreed perfectly. This result, which he made known to the physician, gave encouragement to proceed; and, at the end of a few days, he drank with good effects, five or six glasses. As the water of the *Grand Grille* has the character of being much more active than that of the Hospital, M. Petit was desirous that the patient should make another trial of the latter. This water produced upon his stomach exactly the same effect as it previously did; and he was obliged to return to the water of the *Grand Grille*, which he continued to use with advantage. Of the cause of this difference chemical analysis gives no explanation hitherto.

Similar observations have been made by M. Lucas.

Among all the phenomena produced by the use of the waters of Vichy, alkalinization is the only uniform one among all patients, whatever be the nature of their disorders and the spring which they employ; and it is the most important. It appears that this condition of the system is produced on different persons by different amounts of the water taken; and though the alkaline state of the secretions is generally in proportion to the amount drunk, and the time during which the drinking and the endermic application of the waters is continued, it by no means follows, by increasing the dose beyond a certain amount, the alkaline condition of the secretions is to be more certainly maintained. In some patients in whom the use of the water, in small and moderate quantities, is sufficient to produce and maintain the alkaline state with benefit to the health, the use of larger doses induces irritation in the stomach, and is speedily followed by an acid condition of the secretions. The more the water is increased, the more marked is the acidity of the secretions; and this irritation is only allayed, and the fluids brought to their alkaline condition, by returning to small doses. This result is generally observed in connection with an excessive degree of excitement, with fever or some acute inflammation.

In other words, in states of the system, with fever or inflammation, the Vichy waters are not only inadmissible, but they become injurious by aggravating various symptoms.

It appears, therefore, that the administration of these waters is not a matter so simple and easy, as might at first sight be imagined. It is not in every condition of the system that it is proper to induce the alkaline state of the blood and the secretions; nor even in those states in which this indication is proper, is all that is necessary to be done to administer the water until the effect is produced. Many circumstances require to be taken into consideration in order to administer these waters so as to obviate bad results and produce curative effects; and these circumstances the physician requires to consider not only when the patient begins to use the waters, but, from time to time, while he is using them. It is scarcely necessary to say, that the successful administration of these waters requires the physician to form correct notions on the nature of the disease, and the stage which it has attained, and on those complications with which it may be accompanied.

With the view of rendering this point more intelligible, M. C. Petit enters into some explanations of the state of the vessels and their contents in those forms of disease, in which chiefly the use of the waters is indicated. When inflammation has a certain degree of intensity, and has continued for some time, the blood stagnates in various points at once, and swelling is more or less considerable. Serum and sero-albuminous matter, sometimes blood itself, may be effused into the interstices of the tissues, and thus augment swelling.

When, after a certain time, the inflammatory orgasm has subsided, if the organs return to their usual size and consistence, the disease is said to terminate in resolution. This favourable termination, nevertheless, is not in all instances the result. Of the increased size, some degree remains, and not unfrequently this is attended with increased firmness and some hardness. These conditions, themselves morbid, act as causes of further disease, and the general health accordingly suffers, or rather is not re-established. The extent and consistence of textural and organic enlargements taking place in this manner vary according to the natural size and texture of the organ affected; but the mode of their development he represents to be at all times and everywhere the same, as is observed in the membranous, glandular, cellular, or parenchymatous tissues; and the matter of which they consist appears to be in all cases almost entirely composed of albumen and different proportions of fibrine which the blood has deposited in the interstices, and which there and in the capillary vessels of the diseased part undergo coagulation.

If it be considered, therefore, he argues, that the albumen and fibrine which form the basis of chronic enlargement, are soluble in alkalies, and if it be remembered that the waters of Vichy not only easily increase the alkalinic constitution of the blood and other animal fluids, which are naturally alkaline, but communicate the alkaline character to all the secretions which are naturally acid, he thinks it evidently results that, by subjecting patients to the action of these waters, and thus rendering in them the blood more fluid, the coagulated matter of which these enlargements consist is more easily penetrated and imbibed by it, and is thus subjected to the influence of a chemical (?) action, which, by adding, tends to soften and liquefy it, and place it in conditions favourable to absorption.

It becomes a natural question whether, if this explanation be admissible, the alleged change is not equally applicable to the removal of the residue of inflammatory enlargement in the thoracic as in the abdominal organs. If the alkalinization of the blood is serviceable in effecting the diminution of enlarged liver or spleen, or indurated pancreas, or uterine or ovarian enlargement, should it not be equally available in restoring the texture of an indurated lung or enlarged heart, or communicating to the blood those properties which may enable it to restore the texture of these organs? To this question we perceive no answer; and with the preliminary conditions laid down, we fear that it does not admit of answer.

On the other hand, it might be argued, that this difficulty is a proof that M. Petit ascribes probably too much to the solvent and resolvent powers of the Vichy waters. It may seem probable that he proceeds a step too far, when he assumes, that all enlargements depend upon interstitial effusion of lymph and fibrine. Many of these consist of mere vascular congestion, of blood moving slowly or stagnating within vessels; and even in instances in which lymph and fibrine are interstitially effused, this retarded motion and stagnation of blood is also present. Is it not probable that such agents as the waters of Vichy act rather in diminishing this vascular and venous congestion, than in promoting the absorption of interstitial lymph?

It is not unimportant to observe, in reference to this part of the doctrine, that M. C. Petit himself is obliged to admit that the capillary vessels, which have been long distended and relaxed, are excited to a certain degree by the action which the mineralising principles exert on their vitality, and they then recover their faculty of absorption, and, at the same time, the force with which they must unload themselves of their contents, and convey them into the circulation.

It is probably not quite fair to apply to the use or even the abuse of these waters, all the objections that have been or may be brought against the use of pure alkalis. Most judicious physicians know that the use of alkalis may be indicated at one stage of a disease, and may be contraindicated at another. It is also most important to bear in mind that they are agents, the use of which cannot be continued long; and that, even when they are employed, their administration should be occasionally suspended; and they ought either to be combined with other agents, or, after they are given up, other remedies should be employed. The objections, therefore, which M. Trousseau, and many others, it may be added, have urged against the use of pure alkaline medicines, lose something of their force when adduced to prove the hurtful effects of the use of the Vichy waters, and require to be something modified. It is indeed natural to suppose, that the other saline ingredients, muriate of soda, sulphate of soda, and, perhaps, sulphate of magnesia,—for this appears to us to be arrangement in the actual waters,—as well as iron, bromine, and iodine, all contribute to modify the action of the mineral alkali, and all contribute a little in producing both physiological and therapeutic effects. Even the manganese and the arsenic, though in very infinitesimal doses, must be allowed to have some little influence. What is undoubted is, that the majority of patients who take these waters, acquire appetite, digest better than they previously did, and, instead of losing, seem to acquire strength. If it were allowable here to speculate on the delicate ground of final causes, and to pretend to penetrate the mysteries of Nature, it might be said that the composition and effect of these waters read a most important lesson to physicians. They show that single unaided remedial agents are not in all cases advisable; that the best and most judicious method is the combination of several agents in minute doses; and that, in the exhibition of potent and active agents, as iron, iodine, bromine, arsenic, and manganese, it is rather very minute doses in large dilutions, than considerable doses, that are likely to prove beneficial; and that, when arsenic is administered for the cure of disease, it ought to be combined with iron.

In one morbid condition, M. Petit observes, the waters of Vichy evince a very decided and unequivocal, though peculiar effect. In some persons the use of these waters is followed by emaciation; in others its effect is to restore plumpness where it had disappeared. In persons unnaturally, or rather morbidly corpulent, the waters produce decided attenuation and reduction of size. In such patients the abdomen becomes less tumid and bulky; the breathing is performed with less labour and greater facility; they are less unwieldy and more capable of locomotion. M. Petit found that in these persons a decided diminution in weight had taken place, that is, about 11 or 12 kilogrammes in 124. The waters, therefore, he thinks, may be regarded as safe remedies in obesity and morbid corpulence.

Invalids, on the other hand, who have long suffered under gastric and dyspeptic disorders, and who are more or less emaciated, he has observed to recover flesh, strength, and plumpness after the use of the waters.

The waters of Vichy, therefore, he regards as alteratives in all the instances in which they are employed; that is as remedies, which, without producing immediately perceptible effects, are mingled with the blood, penetrate all the tissues, and the mineralizing principles of which act slowly and insensibly, not only on the blood, but upon all the fluids; and that thus they induce in the economy permanent modifications, which become manifest after the lapse of a certain time. In this manner he maintains that large and extensive swellings of the viscera are seen daily to subside and disappear, without the occurrence of any crisis, and without any sensible discharge having taken place, which might be adequate to explain the results obtained. For the production of these results, however, the use of the waters for several weeks is not alone requisite. No immediate effect may be produced; and it is necessary, he allows, to wait for several weeks, and even months, after the treatment is completed, before the full results can be certainly said to have taken place. This is very much what is observed in what is called the after-cure of the German physicians.

The author denies at the same time the deobstruent effects of purgatives admitted by some physicians; and maintains that not only do these medicines no good, but they produce very hurtful effects.

M. C. Petit allows, nevertheless, that not always are the Vichy waters employed without producing perceptible evacuations; we understand alvine evacuations; and which he thinks may then be regarded as in some degree critical, because they are immediately followed by a manifest improvement. But he adds, so little are these evacuations necessary to the favourable result, that he thinks it is seldom necessary to excite them.

Notwithstanding these views of the author, it must be observed that these waters, though they do not act on the intestinal discharges, act energetically on the kidneys; and certainly in the discharge of urine there is a perceptible evacuation as much as in that by the intestinal contents.

The first condition of the employment of these waters is that the disorders for which they are to be administered be in the chronic state. There should be neither fever nor pain; and if these symptoms are present, means must be adopted to remove them.

Secondly, It is not less necessary that the patient who is to be subjected to their use should have no organ which is the seat of an organic affection more or less advanced, of any degeneration which contraindicates their use, and to which their action might be detrimental.

Thirdly, Patients ought to avoid the use of acid drinks and acescent food.

Lastly, It is chiefly in chronic disorders of the abdominal viscera that the waters of Vichy are most beneficial.

We should next proceed to consider in more detail those chronic abdominal disorders, in which the use of these waters is represented to be principally indicated, and in which they are said to be most certainly and potently therapeutic. But this our limits will not permit us at present to attempt. Here, therefore, for the present we pause; but we hope to have an early opportunity of returning to the subject, and making known the instructions of M. Patissier and M. C. Petit on this subject.

Before concluding, however, it is proper that a few words be said on the three works which form the subject of this article.

The treatise by M. Lecoq is truly what it professes to be, an account of Vichy and its environs, with short descriptions of the springs, the chemical constitution of the waters, and an instructive view of their medical effects. The author also gives some interesting sketches of the history of Vichy and the transactions of which it has at different periods been the scene, and well written accounts of the principal places and the most picturesque scenes in the neighbourhood. The work, which is read with interest, forms one of a series of publications on different districts of Auvergne.

The report by M. Patissier is confined chiefly to the question of the effects of the waters of Vichy in the treatment of gout and stone. The report is elaborate and judicious, contains a series of well told and instructive cases, and might seem to furnish all that is requisite in order to determine the true value of these waters as therapeutic agents, were it not followed by the treatise of M. Charles Petit.

This is the most comprehensive and complete work that has yet appeared upon the medical properties and applications of the Vichy waters. M. Petit has been for several years engaged in the study of this subject; and the result of his researches is a series of nine memoirs upon the uses and occasionally the alleged abuses of the Vichy waters, commencing in 1834 and extending to 1843. The seventh of these, it should be mentioned, is the report by M. Patissier, which appears in the list in consequence of the answer by M. C. Petit. The present volume may be regarded as the incorporated result of the whole of these essays; and it cannot be denied that it possesses strong claims on the attention of the medical reader. The author in it takes a view of all the diseases and morbid states of the system, in which the use of the waters of Vichy are likely to be beneficial. Part of this has been already brought before our readers in the present article; and we hope soon to be able to give an account of the remainder of the volume.

ART. II.—1. *A Treatise on the Practice of Medicine.* By GEORGE B. WOOD, M.D., Professor of Materia Medica and Pharmacy in the University of Pennsylvania; one of the Physicians of the Pennsylvania Hospital; one of the Authors of the Dispensatory of the United States, &c. &c. In two volumes, 8vo, Vol. I., pp. 791. Vol. II., pp. 840. Philadelphia, 1847.

2. *First Principles of Medicine.* By ARCHIBALD BILLING, M.D., Fellow of the Royal College of Physicians; Member of the Senate of the University of London; Honorary and Corresponding Member of the Senate of the Medical Societies of Florence, Brussels, Dresden, and New York; formerly Professor of Clinical Medicine, and of the Theory and Practice of the School of Medicine, and Physician of the London Hospital, &c., &c. The Fifth Edition, Revised and Improved. London, 1849. 8vo, pp. 332.

The Practice of Medicine, or that which is emphatially called the Art of Curing Diseases, is placed at the present time in circumstances something peculiar. Keeping altogether out of view the new forms of disease which have been made known, or at least have been more accurately described than previously, and the numerous instances in which diseases resembling each other have been distinguished, so many new methods of treating diseases, and so many new remedies and new modes of exhibition have been introduced, that the therapeutic department in medicine has unavoidably become one of very great extent, considerable contrariety, and no ordinary degree of complication.

It would lead to unnecessary and unprofitable minuteness, were we to attempt even to enumerate all the instances, in which either old methods of treatment have been revived and modified and adapted to the taste of the present times, or methods wholly new have been proposed; in which old remedies have been again recommended under more favourable auspices, or remedies new and previously unknown have been introduced to the notice of practitioners. It is sufficient to say that the fact is too manifest to require proof.

One of the direct effects of this profusion of therapeutic resources has been to induce a sort of plethora and hypertrophy of the department of Special Therapeutics. The modes of treatment and the remedies for each disease, and for different forms of disease, are so multiplied and numerous, so varied, and in some instances so opposite, that the works devoted to the explanation of these methods, and their modes of application, have become proportionally enlarged and detailed. A treatise proposing to unfold the Principles and Practice of medicine in a manner and upon a scale commensurate with the necessities thus enforced, would require to be so large, that it incurs the risk of deterring the student from perusing it, unless in a very desultory and irregular manner.

Besides the evil now referred to, others will occur to observant minds as the more or less necessary result of the multiplication of therapeutic methods and remedial agents. It cannot escape observation, that the absolute efficiency and certainty of the healing art have not been increased, in the exact proportion to the apparent number and energy of therapeutic agents. In point of fact, the physiological powers and effects of therapeutic agents do not in all instances correspond with their therapeutic effects. Then it often results, whether from the love of novelty or the difficulty of making exact observations, or the partiality which patrons of new methods and new remedies evince in favour of their own views, that few remedies come up to the representations made of their sanative powers. All these circumstances render it, if not imperative, at least desirable, that in works devoted to the exposition of the methods of the art of healing, attempts should be made to estimate the exact and true effects of different remedial measures, to state how far these measures come short of the characters assigned to them, to reduce to their just level all those measures and remedies which may have been raised above it, and to specify the limitations and conditions under which the administration of all remedies ought to be regulated. The proper accomplishment of all these and similar purposes necessarily occupies much of the space and time which the writer on the practice of medicine can command, and corresponding large proportions of the works required to explain this complicated branch of medical study.

Notwithstanding the inconvenience now adverted to, systematic works are requisite, in order to give the student connected views of the entire subject, and furnish him with the desired information on each individual head;—at once to initiate him in the principles and the rules of art, and to put his reasoning faculty and judgment in that train of observation and reflection which may render him a judicious practitioner.

In this position of circumstances, two methods present themselves to the choice of the author. One is to follow the plan of framing a comprehensive body of theoretical principles and therapeutic rules, so ample and so detailed, that it, so far as the brevity of human life will allow, answer all the ordinary emergencies of the medical practitioner. The other is to give in a short and condensed form the mere necessary and essential outlines of the art of curing diseases: those principles and rules, in short, which are indispensable, leaving to the discretion and ingenuity of the reader, to apply in detail the particular modifications which particular forms of disease require. Works constructed on these two plans would symbolize, as it were, opposite extremes. A work composed of the first specified plan would be ample, minute in detail, and perhaps voluminous and prolix. A treatise composed on the latter principle, would be brief and sententious, certainly more likely to be read, and perhaps more easily read; and it would have the advantage of making the student believe that when he had read it, he had done all that was necessary to render him a skilful physician. The two works, though on the same subject, would indeed be diametrically opposite to each other. The circumstances now described are exemplified in the works to which at present the attention of the reader is directed.

Of these two works on the Practice of Medicine, the first is entitled to attention from its comprehensive character, and the large amount and variety of information which it contains.

The arrangement of the work may be understood from the following sketch.

It is divided into two parts or general divisions; the first on General Pathology and Therapeutics; the second on Special Pathology and Therapeutics.

The First Part is subdivided into four chapters, in which are treated the following subjects; the Constituent forms of Disease; the Causes of Disease, or Etiology; Symptomatology or Semeiology; and General Therapeutics.

In the First Chapter the author gives a view of the diseased states of the fluids; the diseases of the solids; and then in two sub-sections of diseases from mechanical and chemical causes; and disease from influences upon the vital properties.

Under the latter head he treats in six successive articles of irritation, inflammation, depression, congestion, fever, and peculiar morbid products, containing tubercular disease, melanosis, organized non-malignant products, carcinoma, and parasitical animals. In these the author gives useful views of the several subjects.

The Third Chapter, on semeiology is divided into four sections, devoted to the following subjects; the symptoms of disease; the cause, duration, and termination of disease; diagnosis; and prognosis.

The Fourth Chapter, on general therapeutics, consists of two sections; the first on the formation of general indications, as they are named; and the second a view of general therapeutic processes.

This, which forms the preliminary and introductory part of the work, occupies two hundred and nineteen pages of the first volume.

The Second Part or division of the work, on Practice of Medicine, properly so called, or Special Pathology and Therapeutics, then follows. In this Dr Wood follows a classification of diseases which, though not quite new, is nevertheless in some respects peculiar to himself. Upon comparing diseases, he observes, we find occasion to divide them into three great classes, having reference to their seat. The *first* class includes those diseases which occupy the whole system at the same time, and in which all the functions are simultaneously deranged. Such, for instance, are the different forms of fever, and the acute or febrile cutaneous eruptions. To the *second* class he refers those constitutional affections and distempers which manifest themselves in inducing local disease in any part of the system, but not in all parts at the same time. To this head belong only rheumatism and gout. The *third* class embraces all the proper local diseases, or those which essentially affect some particular structure or function, and in which any general phenomena that may be presented, are only secondary. Under this head the author arranges the whole of the local inflammatory diseases, and many not inflammatory, as the different forms of dyspepsia and cholera; as well as the dynamic disorders of the lungs and heart; diseases of the blood; all the hemorrhages; all the disorders in secretion; and, in short, the whole tribe of human diseases not included in the two previous classes.

It cannot be denied that the individuals of this class of local diseases are arranged according to a certain principle of order. Thus, all these local disorders are arranged according to the physiological characters of the organs and functions which they affect. The entire class is divided into six sections—I. Diseases of the Digestive System; II. Diseases of the Absorbent System; III. Diseases of the Respiratory System; IV. Diseases of the Circulatory System; V. Diseases of the Organs of Secretion; and, VI. Diseases of the Nervous System. Each of these sections, excepting the second, is again subdivided into sub-sections, which may be most readily understood from the following tabular arrangement. The second section is divided into articles only.

I. Diseases of the Digestive System.	Sub-section.	I. Diseases of the Mouth,
		II. „ of the Fauces, Pharynx, and Oesophagus;
		III. „ „ Stomach;
		IV. „ „ Bowels;
		V. „ „ Stomach and Bowels conjointly.

II. Diseases of the Absorbent System.	Article	I. Inflammation of the Lymphatics;
		II. Inflammation of the Conglobate Glands;
		III. Scrofulous Inflammation of the Glands, or External Scrofula;
		IV. Disease of the Bronchial Glands;
		V. Disease of the Mesenteric Gland.

III. Diseases of the Respiratory System.	Sub-section.	I. Inflammation of the Respiratory Passages;
		II. Nervous or Functional Diseases of the Respiratory Passages;
		III. Organic Disease of the Pulmonary Tissue and Pleura;
		IV. Functional Disease of the Pulmonary Tissue.

SECTION IV. Diseases of the Circulatory System.	Sub-section.	I. Diseases of the Heart;
		II. „ „ Arteries;
		III. „ „ Veins;
		IV. „ „ Blood;
		V. „ „ Blood, and Blood-Vessels conjointly.

SECTION V. Diseases of the Organs of Secretion.	Sub-section.	I. Diseases of the Serous and Cellular Tissue;
		II. „ „ Skin;
		III. „ „ Salivary Glands and Pancreas;
		IV. „ „ Liver and its appendages;
		V. „ „ Spleen;
		VI. „ „ Urinary Organs;

SECTION VI. Diseases of the Nervous System. Sub-section.
I. Diseases of the Brain;
II. „ „ Spinal Marrow;
III. „ „ Nerves:
IV. „ „ Nervous System in general.

Such is the order in which Dr Wood treats of the diseases incident to the human frame. Its advantages and its disadvantages it will not be difficult to comprehend. It appears, so far as can be perceived, to answer remarkably well the purpose for which it is employed.

It comes not within the purpose of a notice like the present to enter into any detailed account of the present performance. For such an undertaking, the work is too lengthened and too much detailed; and all that we can do, is to state in general the manner, in which the author has accomplished his labour.

The descriptions of diseases are in general given with care and accuracy; and the author has manifestly been anxious to communicate just ideas of the present state of information on the distinctive characters of diseases.

The pathological and intimate nature of diseases is unquestionably, in reference to judicious and efficient treatment, the most important of the integral and constituent elements of medical practice; and on this subject Dr Wood has, from extensive reading and research, collected whatever seemed most essential, from English and foreign authors, as well as from his active brethren in the different cities and states of the American Union. The opportunities of American physicians for collecting information on the subject of pathology, are at once extensive and valuable. And the present author has exerted himself very successfully in placing before students and practitioners all the most serviceable results of these opportunities.

It is just also to Dr Wood to say, that upon another department most essential to the practical physician, he has bestowed great attention. We refer to the method of diagnosis. His account of essential and pathognomonic symptoms is instructive, and the enumeration of the physical signs and their signification in diseases of the heart and lungs, promises to be useful to the practitioner.

In the therapeutic department Dr Wood has been at great pains to place before the reader all the various remedies that have been or may be used for the alleviation or cure of diseases; and the student can scarcely say, if he reads the work carefully, that he has not been informed what should be done.

It is nevertheless a circumstance not fortunate, that little or no attempt is made to discriminate between the claims of different therapeutic methods, and the merits of different remedial agents. All are mentioned nearly in the same manner, and as possessing claims to attention equally strong; and the reader must often be left at a loss, amidst the multiplicity of curative plans and remedies, to select which is the one most suited to the particular form and stage of the disease which he has to treat.

It must be allowed that to a certain extent, this is an unavoidable consequence of the present state of medical testimony upon the therapeutic part of the profession; and though we feel it our duty to mention the fact, we do so without giving any opinion as to whether it might have been otherwise or not.

The circumstance now mentioned does not prevent the work from being regarded as presenting a tolerably correct view of the present state of medical practice. Though medicine has at all times been a fluctuating and unsettled art, there probably never was a period, when it has partaken so much of this character as during the last eight or ten years; and any work which proposes to embrace all ideas and all methods cannot be free from the same influence. In this view the work may be said to reflect the character of the times; and in attempting to assign even-handed justice to the patrons of all remedies, it has presented a picture of the state of medicine in the middle of the nineteenth century.

Diametrically opposite in several important respects to the large Treatise by Dr George B. Wood, are the FIRST PRINCIPLES OF MEDICINE by Dr Billing. In the former work, above 1700 closely printed large octavo pages, are employed in describing the long list of diseases liable to attack mankind, and explaining the means of curing them or alleviating their effects. In the latter performance the nature of diseases and their appropriate modes of treatment are delivered in three hundred and twenty widely printed octavo pages. In the treatise by Dr Wood, the author endeavours to give a view of the present state of medical theory and medical practice agreeably to the testimony and authority of the best informed physicians in Europe and America. In the First Principles of Medicine, Dr Billing, little solicitous about the opinions and practice of other physicians, and either deviating from them widely, or entirely opposed to them, gives what he conceives ought to be the principles and practice of the art of healing agreeably to his own views. The one is a laborious collector and careful arranger of the doctrines and experience of his professional brethren, rendering to all the deference to which their exertions entitle them; the other is a bold and independent preceptor, confident in his own observation and experience, and in that confidence selecting only the most important points of his subject, and placing them in that prominent light which serves best to show the value which he attaches to them, and the force with which he desires to impress them on the mind of the reader.

The first edition of the First Principles of Medicine was published in 1831; and since that time the work has passed through four editions; and the present is the fifth. Whether owing to the sententious brevity and the original and decided tone of the author, or the actual merits of the book, it has been very favourably received, especially by the senior members of the profession.

The third edition, which appeared in 1838, contained several additions to, and expansions of, the doctrines taught in the first edition; and the present edition is still more expanded. The work is nevertheless remarkable both for concentration and a certain degree and form of originality: and by these means it recommends itself to those who have little spare time, and who are probably tired with what is denominated the prolixity and minuteness of detail of systematic works.

The arrangement of this work, or the order in which the author delivers his doctrines, is the simplest possible. There is no division of subjects; no parts, no chapters, no sections, no subdivision of any kind. The author commences at once with the subject of disease, and informs his reader of the importance of pathology and morbid anatomy, of correct knowledge of the functions of the living body in the healthy state, and gives a short and rapid general view of the structure of the human body. He then considers the living properties of various systems, especially the sanguiferous, the muscular, and the nervous. He then shortly considers the several forms of sensibility, animal heat and its causes, and forthwith he enters on the subject of Inflammation.

He then shortly considers the nature of Vascular Congestion and Irritation, which he denominates Morbid Sensibility. This is followed by considerations on the secretions, and the effects which morbid states of the system produce upon them, either in increasing, diminishing, or perverting them.

Then follow observations on the effects and terminations of inflammation, and the most proper modes of regulating the course which nature takes to make them serviceable, and to prevent them from producing mischief. Then come ulcer, abscess, purulent matter, and lymphy or plastic exudation.

Not much method is observed in this discussion. For instance, the author at one part stops to deny that "inflammation is the means by which local injuries are repaired, and may be considered as the restorative principle;" and contends that "it is no such thing; but a state of disease; else why speak of remedies for it?" It would not be difficult, were it worth while, to show that, though it is a *state* of disease, yet it may be a means of repairing injuries, and be also a restorative principle; and that the two characters of inflammation are not incompatible.

Again, the author stops in his career to caution the practitioner against continuing antiphlogistic treatment as soon as inflammation is subdued, and to suggest to him also to adopt a different method of procedure. He will find many practitioners of the present day who go much further, and either denounce all antiphlogistic treatment entirely, or declare against blood-letting and similar measures as not merely useless, but positively hurtful.

Then, after observations on small-pox pustules, poisonous diseases, hydrophobia, cancer, and tumours, follow some interesting observations on the uses of a great variety of remedies, the time for using them, and their methods of administration.

Next follow observations on alleged specifics, as mercury, arsenic, meadow-saffron, sulphur, bark, and similar agents. The author, if we understand him aright, denies altogether the existence of specifics. There is nothing of the kind in the whole Materia Medica. What the alleged specifics do, may be performed, and is daily performed, by other remedies.

This is followed by a few words on the nervous influence as preliminary to observations explaining the operation and effects of Stimulants and Sedatives, Narcotics and Tonics, and the distinction between them. In speaking of these agents the author maintains that the terms have been often grossly misapplied, and that on these subjects great confusion of ideas and language have prevailed. This confusion, therefore, he undertakes to remove, and fix more accurately than heretofore, the limits between each of these four classes of agents.

A Stimulant he represents to be that which, through the medium of the nervous system, increases the action of the heart and other organs, by calling forth nervous influence, or by facilitating its extrication in them; and the examples which he adduces are wine, brandy, and other spirits, the products of alkoholic fermentation.

A Sedative, on the other hand, is that which diminishes the action of the heart and other organs, by repressing nervous influence; for instance, foxglove and green tea, referring to the well-known story of Dr Edward Percival, in proof of the sedative effects of the latter. Both tea and coffee, which are usually called stimulants, he regards as in most circumstances sedatives. All teas, he maintains, are sedatives; but green tea by far the most powerful. In the instance of Dr E. Percival, it always appeared to us that the green tea produced, as it does upon many, a poisonous effect; and probably an emetic would have answered as well as the brandy which was given. The most diffusible sedative, according to Dr Billing, is hydrocyanic acid (p. 82).

The author subsequently explains the reason why tea and coffee have been generally regarded as stimulants, which he ascribes to their inducing an excited state of the circulation of the brain in certain states of the systems. *Sedatives*, he says, are miscalled stimulants, when they relieve the vertigo, stupor, or coma of stimulants, or the drowsiness of fatigue or other plethora; because this relief is called arousing or awakening (p. 87).

The effects of stimulants and sedatives are then compared with those of narcotics.

Narcotics, he thinks, do not alter the quantity of nervous influence. They merely impede its communication and transition. They, in short, stop the conducting power of the nerves; a result which he illustrates by referring to the mechanical pressure which is the effect of placing the arm over the back of a chair or in any similar position by which the nerves may be temporarily compressed. The loss of sensation, and voluntary motion thus induced, he regards as representing the effects of narcotics, in short, the state called Narcotism.

The Narcotics chiefly employed as hypnotics and anodynes are, opium, henbane, and Indian hemp. Of these, opium is most used and most deserving use; and those who know how to employ it rarely have recourse to any other agent of this class.

On the fourth member of this division, that of Tonics, the observations are more lengthened; and the author enters into greater detail as to the effects of these agents, the different orders of them, their peculiar modes of operation, and the circumstances which indicate the employment of one in preference to that of another.

Tonics Dr Billing defines to be substances which neither immediately nor sensibly call forth actions like stimulants, nor repress them like sedatives, but give the nervous system power to generate or secrete the nervous influence by which the whole frame is strengthened. This difference must be observed; tonics give strength; stimulants call it forth. We need not fear any danger from keeping the nervous system in good order by tonics, but we must beware of exciting over-action by stimulants when either inflammation or fever is present. Stimulants excite action; but action is not strength.

The beneficial effects of tonics are mostly witnessed in the imperfect and bad forms of inflammation, at the close of inflammation, in congestion, and similar conditions. Tonics, such as bark, then, by imparting healthy energy to the capillary arteries, have a beneficial influence on inflammation, for instance, the erysipelatous and the rheumatic, even when blood-letting and sedatives may be necessary to keep down the action of the heart; whereas, so long as the action of the heart is not below par, the effect of stimulants would be injurious. In those circumstances in which the acute stage of inflammation has subsided or has been subdued, and in which the powers of the constitution are so much reduced that the reparatory process degenerates, so that parts cannot heal, great advantage results from giving *Tonics* to prevent this state as much as possible, even while the physician is keeping down the pulse by blood-letting, sedatives, and cathartics, if the constitution seem to require this administration; but by no means should stimulants be administered in the acute stage. As soon as the acute stage is passed, and the reparatory process or passive stage of resolution commences, the physician should watch for the moment, when it may be necessary to administer stimulants, in order to prevent degeneration of the process from taking place.

That tonics must be considered as agents distinct from stimulants and sedatives, he thinks, is evident from the circumstance that we cannot cure an ague or neuralgia either by stimulants or antiphlogistic treatment without the aid of tonics. Many slight cases of such will get well if left to nature; but with severe and obstinate cases it is different.

The term Tonic is applicable, according to Dr Billing, to all those medicines which cure chronic inflammation, without being either stimulant or directly sedative or depletory. This is one reason, perhaps the only one, why he considers mercury as neither stimulant nor sedative, but tonic (p. 101); that is, he explains, by its specific action on the capillaries, whether directly on their tissue, or through the medium of the nerves, it causes them to contract, when they have not power of themselves to do so.

This contraction of the capillaries, by means of certain agents, he further represents to be the rationale of the operation of the remedies called alterative, and of the process or action called so. stimulating the secretions of the internal organs.

The tonic property is often combined with astringency; but that these are not identical, he infers to be shown by the phenomena exhibited by quinine, which contains no tannin, and cinchona bark, which contains very little. Both are highly tonic, while tannin, oak bark, catechu, are very slightly so.

Considerations of the kind now mentioned, pursued further, lead Dr Billing to extend the character of tonic, though in an indirect sense, to opium; for instance, when in certain very painful, wearing down diseases, want of sleep continued for some time, wears out the strength of the patient; and upon sleep being procured by means of opium, strength is restored.

After some further observations, he enters, at page 111, upon the varieties of inflammation, and the proper treatment required by each. Then follow instructions upon diet and the use and application of animal food and of wine. Then opium, again, as an antiphlogistic, and hydrocyanic acid as sedative, in certain irritable disorders. The author then enters (p. 129) on what he himself allows to be one of the principal peculiarities of his pathological theory; namely, the doctrine of MORBID SENSIBILITY, a denomination which he prefers to that of Irritation.

At page 149, abscess again receives attention; at page 151, the difference between phlegmonous and erysipelatous inflammation; then, at p. 152, the application of astringents; at p. 155, local inflammation, and the treatment required; at p. 156, symptomatic fever; at p. 160, the typhoid state; at p. 162, typhus and typhoid fever, and visceral disease, as causes of maintaining febrile disorders; and the effects of various remedies, blood-letting, general and local, laxatives and cathartics, saline medicines, antimonials, and the use and abuse of calomel. This is followed by some good observations on the proper time and combination of symptoms for the administration of stimulants.

The general conclusion as to fever is, that there is no such thing as synochus and typhus as distinct from each other; but that there is one simple fever, and which is exanthematous, petechial, though the rash may never be sensibly developed, as in *scarlatina maligna;* that is, continued synochous (*synocha*), whether with high or low pulse, high or low temperature; and that when the sensorium is oppressed in addition (p. 161, note), it is Typhous (*Typhus*).

Next, at 201, follow the NEUROSES, or Diseases of the Nervous System. After this, at page 232, Dr Billing informs the reader that, having discussed the nature of two large families of diseases, fevers and nervous disorders, he is to add a few observations upon some particular diseases. These are first, ague, cholera, and influenza; then the affection of the skin called erysipelas and that of the fibrous system called rheumatism; then phthisis; and, lastly, those diseased states of the capillary vessels which produce catarrhs, dropsy, hemorrhages, and chronic cutaneous eruptions. Upon cholera we, on a former occasion, directed attention to the doctrines of Dr Billing; and it is unnecessary now to return to that vexed and not very profitable subject.

On rheumatism are given some judicious observations. The author adopts the view that places that disease principally in the aponeurotic sheaths; but he contends also for an affection of the nerves. Dr Billing comes out with some severity upon the Edinburgh physicians, with whom he says blood-letting was quite out of fashion when he visited that city, for the reason that a few patients are or were injured by it, and because blood-letting *sometimes*, he says, caused the convalescence to be tedious.

" No doubt," he adds, "this happened when discrimination was not used. All my life I have seen men prescribing for diseases by name. One man bleeds always in acute rheumatism; another never, or scarcely ever" (p. 265).

From these remarks it results, that Dr Billing either does not read or reads little. Had he derived his knowledge of the treatment of rheumatism in Edinburgh from more recent sources; had he looked into the pages of this Journal, the excellent Dictionary of Dr Copland, and other similar works, he must have seen reason to modify considerably his statements upon this subject, and to make them such that they would have given a more exact representation of this matter. If Dr Billing will only refer to the account of Dr Roderick Macleod's treatise on rheumatism in the fifty-seventh volume of this Journal, April 1842, he will find that upon the question of blood-letting in acute rheumatism the three following points are established. First, the apprehension of the hurtful effects of blood-letting in acute rheumatism did not originate with, and was not confined to, Edinburgh physicians. It arose among the physicians of London, and was maintained among them, first, because the remedy was thought not adequate to cure the disease; subsequently, because it was believed to favour the occurrence of metastasis to the heart and other internal organs; and, finally, because it was conceived to be unsuitable to the constitutions of the inhabitants of the metropolis, who, it was thought, could not well endure general blood-letting. Secondly, that, whatever might be the practice at the time when Dr Billing was in Edinburgh, both before and since that time, it was not a general practice to refrain from the use of the lancet, and by some, at least, of the Edinburgh physicians, blood-letting, both general and local, was employed for the treatment of rheumatism, acute and subacute, and occasionally in certain of the chronic forms. In the third place, it will be found that some of the Edinburgh physicians are not influenced by the names of diseases, in conducting treatment, but take into consideration both the nature of the symptoms, their pathological causes, the general state of the system, and the peculiarities of each case.

Dr Billing then lays down the rules which he thinks should be followed. It is good to see that he does not ascribe to the blood-letting practice the maladies of the heart and other internal organs, which both Edinburgh and other physicians have imagined took place in consequence of its employment (p. 266, &c.). All his observations on this subject deserve most serious attention.

In explaining the treatment required for phthisical cases, Dr Billing speaks, at p. 306, of the method practised by the Rev. Dr Stewart, as " a rational mode of treatment, which had considerable success; but because," Dr B. adds, "he could not work miracles, the plan was unjustly depreciated." It is unnecessary to dwell on this subject, upon which we spoke at some length in vol. xl. p. 132. But how that practice could be called rational, which applied the same method in every case, and confounded cases of dyspeptic and chlorotic, uterine, and nervous disorders, with genuine tubercular phthisis, is a point which, to our simplicity, exceeds comprehension, and upon which we feel the want of further information. Respect for the memory of the benevolent and amiable author of this method prevents us from saying more. The other observations of Dr Billing are highly judicious.

In delivering his views upon the nature of diseases and their treatment, there is neither pause nor interruption, neither distinction nor separation, from the beginning to the end of the volume. The whole is a sort of continuous discourse, not always very methodical, and occasionally chequered with repetition; but without chapter, paragraph, table of contents, or any mechanical assistance to help the reader in his progress. So averse is Dr Billing to any division and arrangement of this kind, that he declined adding an index even in the third edition; while, certainly, to such a work, either a table of contents or an index was, if not absolutely, at least in a high degree, necessary. In the present edition he has so far made a concession to the frailty of human attention and the feebleness of human memory, that he has been induced to append an index. A table of contents, and a subdivision of the work into chapters, sections, and paragraphs, so as to keep its respective parts separate, and aid the reader in forming distinct conceptions of the relation between the different subjects, is still a desideratum; and we think that, if Dr Billing considers the matter, in reference to the mental faculties of readers, he will admit the force of what is now said.

Various reasons render it quite unnecessary to give a formal account of the contents of this work, and of the manner in which the author discusses the subjects considered. In the first place, every one should peruse it himself; and carefully mark, learn, and inwardly digest what the learned author has written. In the second place, the matters are placed before the reader's judgment in a clear and forcible manner, so that it is more easy for them to study Dr Billing's instructions as delivered by himself, than as passing through the alembic of any third person. In the third place, the book is decidedly suggestive, and, by the sensible and judicious as well as acute comments which the author makes on various current notions, speculative and practical, it is well calculated to make readers think, and drive them from that routine in which many practitioners are liable to move. In the fourth place, the work, small as it is, contains many observations both theoretical and practical, valuable both for their novelty and their truth. Finally, the work deserves careful perusal, and will reward the reader by furnishing him with many just and serviceable ideas.

ART. III.—1. *The Principles of Surgery.* By JAMES MILLER, F.R.S.E., F.R.C.S.E., Surgeon in Ordinary to the Queen for Scotland; Surgeon in Ordinary to his Royal Highness Prince Albert for Scotland; Professor of Surgery in the University of Edinburgh; Senior Surgeon to the Royal Infirmary, &c. &c. Second Edition. Illustrated by Two Hundred and Thirty-eight Engravings on Wood. Edinburgh, 1850. 8vo, pp. 803.

2. *The Surgeon's Vade Mecum.* By ROBERT DRUITT, Fellow of the Royal College of Surgeons. Fifth Edition, much Improved, and Illustrated with One Hundred and Seventy-five highly finished Wood Engravings. London, 1851. 12mo, pp. 660.

3. *Operative Surgery.* By FREDERIC C. SKEY, F.R.S. London, 1850. 8vo, pp. 709.

OF these three Treatises on Surgery the last alone is new, and not previously noticed in the pages of this Journal. The two first are new editions of works already brought under consideration. Of these, therefore, it is unnecessary to say much.

The Principles of Surgery, by Mr James Miller, are a greatly enlarged edition of the first issue of that performance, which appeared in 1844. The work was mentioned in volume sixty-third of this Journal, Jan. 1845, as one which contained much information on the anatomico-pathological characters and history of those forms of disease which the surgeon has occasion to treat. It is only just to say, that in this respect the character of the work is at once maintained, and, it may be said, elevated, by very ample additions, especially on the microscopical anatomy of the morbid structures. To render the descriptions more intelligible, many representations, illustrating morbid structures, as revealed by the microscope, are introduced. In short, this Treatise is one of great value in the pathological department of surgical diseases, and cannot fail to prove eminently serviceable to the student and practitioner of Surgery.

Subjoined to the volume is a discourse or essay, being, as is stated, the substance of three lectures delivered by Mr Miller on the uses and advantages of chloroform in the performance of painful surgical operations, on the safest mode of application, and on the means of obviating unfavourable accidents. This discourse will be studied with interest by those who wish to employ this agent.

In the fifty-sixth volume of this Journal, October 1841, the second edition of the Manual of Mr Druitt was introduced to surgical readers as an acceptable guide to the student in surgery. It affords us pleasure to observe, that the character of the work then given has been so far confirmed, that two editions have since that time been exhausted; and this is the fifth edition of the manual. Though part of this result may probably be ascribed to the portable and condensed form of the volume, it must be allowed that a good deal belongs to the merits of its contents, and to the skill with which these contents are collected and arranged.

The work consists of five parts, which are arranged in a very simple manner.

The first part is devoted to the explanation and history of those morbid states of the system which are induced either by the infliction of injury or the advent and ravages of disease. Such are the state of Prostration or Collapse; Prostration with Excitement, and Delirium Tremens; the several forms of Fever; Tetanus or Locked Jaw, and Convulsions.

In the second part the author treats of the Elementary Processes of Local Disease in fourteen successive chapters.

These elementary morbid processes are, I. Malformation, Hypertrophy, Atrophy, and other degenerations of Tissue; II. Disorders in the Distribution of the Blood, and Nervous Pain; III. The General Phenomena of Inflammation; IV. Acute Inflammation; V. Chronic Inflammation; VI. Effusion of Serum and Œdema; VII. Hemorrhage; VIII. Adhesive Inflammation and its effects; IX. Suppuration and Abscess; X. Erysipelas and Diffuse Inflammation of the Cellular Tissue; XI. Ulceration; XII. Mortification; XIII. Scrofula; and XIV. Malignant Diseases, or the Heterologous Growths.

In the third part the author treats of the different species of injuries; including the various forms and kinds of wounds; the effects of extreme heat and cold; the effects of mineral and vegetable irritants; the effects of the poison of healthy animals; the effects of septic poisons, especially those derived from dead animal bodies; the effects of poisons generated in diseased animals, as hydrophobia and glanders; and, lastly, the venereal disease.

The fourth part of the work is devoted to the history of the injuries and diseases of the several tissues, organs, and regions of the human body. The order in which the author treats of these subjects is at first very much that of works on general anatomy; and afterwards that according to the regions of the head, neck, chest, abdomen, and the extremities. This being the most important part of the volume, is treated with amplitude, and in detail commensurate therewith. In it the author naturally considers the whole of those local diseases and injuries, the management of which falls under the care of the surgeon, and require to be treated either by means of local remedies and manipulation, not excluding the use of general remedies, or by means of operation properly so called.

In the fifth and last part of the volume, the author explains the nature and object of operations, the best methods of performing them; and concludes with an account of the effects and uses of chloroform, and the mode of administration, and the use of some other anæsthetic agents, during the performance of operations.

The volume is concluded with an appendix containing formulæ for the preparation of such medicines and medicinal compounds as the experience of the best surgeons has found most beneficial in the treatment of surgical diseases.

This work strongly recommends itself to the student and practical surgeon by the large amount of matter which it contains in small compass, by the practical and judicious character of its information, and by clearness and accuracy of its descriptive details.

The work by Mr Skey is confined to the subject of operative surgery.

It is almost superfluous to say how much reproach has been cast upon mere operative surgery by one class of medical persons, and how far even the testimony of various eminent surgeons, who have grown aged in the profession, tends to confirm this reproach. John Hunter, we believe it was, who said, that to perform an operation was an acknowledgment of the inadequacy and incompetency of his art; and the same sentiment, if not as to all, at least as to many operations, was more than once repeated by John Abernethy.

It has been indeed asserted that Mr Abernethy was not a very dexterous or neat operator; and that this was one reason why he took occasion to depreciate operations in general. This reason, however, if it had a real existence, is not adequate to account for the effect. Any man, with average use of his hands, correct knowledge of anatomy, and pretty constant practice, may become an expert, and even, if the term be admitted, an elegant operator. A better and a more natural reason is found in the fact, that Mr Abernethy, by his knowledge of physiology and pathology, with a considerable proportion of common sense, found that he cured, by mere medical management, without operation, many local diseases and injuries, which it was the custom to hand over to the knife. Mr Abernethy was a medical and physiological surgeon; and his habits of thinking and observing led him to consider on all occasions, whether operations might not be dispensed with, and what means ought to be adopted, to accomplish this object. The proof of the correctness of his views is furnished by the history of surgery and surgical operations during the last thirty-five years.

We have had occasion, not long back, to advert to the decided aversion to frequent operations, and to operations in circumstances formerly believed to demand their performance, evinced by two eminent surgeons of most ample experience, undeniable dexterity, and undoubted judgment. All these circumstances must be allowed to be indications that the habit of performing operations had been carried to an unnecessary and perhaps an unjustifiable extreme; that often they must have been performed in circumstances in which they were either unnecessary or positively hurtful; and that it is a proof of greater knowledge in a surgeon, to cure the diseases for which his advice is solicited, by the judicious employment of general and local remedies, than by attempting to remove the parts affected by the knife.

Of several of these objections, it is manifest that Mr Skey is quite aware; of the reproach brought by them upon mere operative surgery, it is manifest he is fully conscious; and to obviate the former and efface the latter, he feels it requisite to make a sort of apologetical defence, apparently as one reason for publishing a new work upon operative surgery.

The knowledge of principles, Mr Skey remarks, greatly exceeds in value that of the details of practice; because principles form the rule of conduct, and the practice the deduction; and, consequently, a perfect knowledge of the reasons why operation is required, and of the kind of operation which the circumstances of the case demand, ought to be the main spring to regulate the conduct of the surgeon, in undertaking even the most ordinary forms of operation. In no department of professional duty are the rules of conduct so imperative as in that, which involves the question of the removal of a portion of the body or the exposition of its internal structure by the agency of instruments; because the effect of local violence is always felt as a blow to the integrity of the frame, however ably the operation may be performed, and however pain may be alleviated by the employment of anæsthetic agents.

The truth of these arguments is doubtless self-evident. The great reasons, nevertheless, in favour of the necessity of operations are furnished by the fact, that there are certain forms of disease, which cannot be prevented, without the interference of operation, from exerting on the frame most injurious influence. In these circumstances, the proper and seasonable use of operation, carefully excluding its abuse, becomes a matter of prudence, if not of necessity, and forms a positive benefit. Considering the matter more attentively, it is known that though many limbs containing diseased bones and joints have been needlessly removed, and that there is every reason to believe, that under more skilful and patient employment of remedies, not only local but general, several of these limbs might have been saved, yet, it is not in the present state of science that we can replace a strangulated bowel without operation, or extract a stone from the bladder without instrumental agency. Often in laryngeal inflammation and œdema of the glottis, the careful performance of tracheotomy may save life, which without that interposition would be suddenly extinguished. These, therefore, are instances in which operation may be resorted to and defended.

There is further a class of operations in which little or no blood is shed, and in which anatomical knowledge and surgical expertness are often of the most essential service. A bone is dislocated; and the limb becomes immovable, useless, and every attempt at movement is attended with great suffering. An expert surgeon reduces the displaced bone, and the patient is once more a free agent. The bladder is distended, and the patient, from some temporary obstruction in the urethra or neck of the bladder, is afflicted by agonizing suffering. The surgeon introduces the catheter, and in a few minutes delivers the patient from his affliction. In such cases as these the beneficial results of surgical interposition are manifest.

Conversely, it is now known that all those forms of disease called by the pathologist heterologous, and by the surgeon malignant, as carcinoma, enkephaloid tumours, and similar growths, though in situations admitting of being removed by operation, are not thereby cured or eradicated from the system. All of these return after intervals, variable in length from a few months to two or three years. In all cases of this class, therefore, operation is not simply useless; it is often indirectly hurtful. To this class of cases, therefore, and they are not few, operation is totally inapplicable.

The considerations now submitted constitute, in our opinion, the best and most forcible reasons for writing, not only a book on operative surgery, but a book on principles something different from those commonly recognised. If certain operations be necessary and practicable; if other operations be unnecessary and ineligible; and if another class of operations, though practicable, be useless and unavailing, in short, inadmissible,—then it becomes necessary to have a work in which all these circumstances, and all others arising out of the question, of the propriety and the eligibility or ineligibility of operation, be deliberately considered and judiciously resolved. In short, so long as the human race are liable not only to local diseases, but to injuries and their effects, some form and degree of operative surgery must be required; and all that sensible persons, not influenced by extreme opinions, can wish for, is, that they be reduced to the smallest possible number—that they be used, not abused, and resorted to only in those cases in which it is clear that they are indicated as beneficial and finally salutary.

With the considerations now adduced borne in mind, the surgical portion of the profession will, we are confident, be perfectly willing to receive the work of Mr Skey without the apology. The treatise is, indeed, one on operative surgery; but it is one in which the author throughout shows that he is most anxious to place operative surgery in its just position. He has acted as a judicious but not partial friend; and while he shows throughout, that he is able and ready to perform any operation which the exigencies and casualties of the human frame may require, he is most cautious in specifying the circumstances which, in each case, indicate and contraindicate operation. It is indeed gratifying to perceive the sound and correct views which Mr Skey entertains on the subject of operations in general, and the gentlemanly tone in which he impresses on readers, the lessons which he is desirous to inculcate. His work is a perfect model for the operating surgeon, who will learn from it not only when and how to operate, but some more noble and exalted lessons which cannot fail to improve him as a moral and social agent.

The arrangement of the work may be understood from the following short enumeration.

First come general observations on the necessity of operative surgery as a branch of medicine, the qualifications of the expert surgeon, the use of instruments, responsibility, and similar subjects. Next, in chapter second, on the use of the knife on the different kinds of suture, the modes of dressing, and the use and application of ligatures. These two chapters may be regarded as preliminary.

Then come Dislocations in chapter third; Bandages in chapter fourth; Fractures in chapter fifth; Aneurism in chapter sixth; Venesection and Arteriotomy in chapter seventh; Varicose Veins in chapter eighth; Amputations in chapter ninth; Excision and Resections in chapter tenth; Tumours in chapter eleventh; Bursae and Ganglions in chapter twelfth; Operations applicable to particular regions and parts in chapter thirteenth; Operations on the chest and abdomen in chapter fourteenth; Hernia in chapter fifteenth; Operations on the External Organs of Generation in the Male in chapter sixteenth; Operations on the Male Perinæum in chapter seventeenth; Lithotomy and Lithotrity in chapter eighteenth; Lateral Curvature of the Spine in chapter nineteenth; Club-foot and deformities in the feet and hands in chapter twentieth; the Operation for puncture of the intestine in constipation and imperforate anus in chapter twenty-first; removal of scars and autoplastic operations in chapter twenty-second; Extraction of foreign bodies and acupuncture in chapter twenty-third; Caesarean operation and ovariotomy in chapter twenty-fourth; Operations on the eye in chapters twenty-fifth, twenty-sixth, and twenty-seventh; and operations on the orbit and lacrymal apparatus in chapter twenty-eighth.

Of one point only in this volume we do not approve. At page 57, in speaking of the use of opium in tetanus, Mr Skey expresses the opinion, that it is better that the patient die under spasm than under tetanus. It is difficult to say how much mischief some persons may perpetrate under the shelter of this opinion. Mr Skey, we hope, would administer the drug mentioned so as not to produce fatal effects; but no one can tell what some reckless practitioner may do, when he finds this statement made in a didactic work of authority.

All the publications of Mr Churchill are prepared with so much taste and neatness, that it is superfluous to speak of them in terms of commendation. The present volume, however, is so remarkable in its mechanical finishing, that even in this circumstance it deserves special mention.

ART. IV—*A Practical Treatise on the Therapeutic Uses of Terebinthinate Medicines; with Observations on Tubercular Consumption, Gout, Mineral Waters, &c.* By THOMAS SMITH, M. D., of the Royal College of Physicians and of Surgeons, London; M. D. et C. of the University of Glasgow, &c.; formerly Senior Physician to the Leeds Public Dispensary; late Physician to the Cheltenham General Hospital and Dispensary, &c. London, 1850. 8vo. Pp. 95.

ALL practical physicians we presume to be well acquainted with the therapeutic uses of oil of turpentine, and the beneficial results which may be obtained from the proper and judicious administration of that drug; and in various volumes of this journal, occasion has been taken to explain fully the circumstances, in which it may be exhibited so as to produce effects which are in vain expected to proceed from other therapeutic agents.

It was only in 1848 and 1849 that, in volumes seventieth and seventy-first, we took occasion to direct attention to its powers as a means of repressing hemorrhage, and to trace its early history in the life of James Yonge of Plymouth.

In the present volume, Dr Thomas Smith has taken an extensive and sufficiently detailed view of the uses of the oil of turpentine, and the preparations of which it forms part, in the treatment of disease. Dr Smith has evidently had much experience of the uses of turpentine, and the fruits of his experience he is desirous to make known to his brethren. The volume contains much useful information, and may be justly recommended to the attention of all those who are not sufficiently conversant with the many applications of this serviceable remedy.

At page 16 the author recommends a useful mode of administering this remedy, namely, that by bath, or what may be named the endermic administration. He also uses camphine in the same manner, combined, as we understand, in both instances, with two pounds of soda. The alkaline camphine bath he represents to possess virtues peculiarly its own. This we can perfectly understand. But Dr Smith will not, we trust, be displeased, if we suggest, from considerable observation and experience of the agent, that the effects are chiefly produced by the alkali. That the turpentine and the camphine are absorbed and produce some effect, we do not deny. They are also inhaled. But the main agent in this mode of administration is unquestionably the soda, which has the threefold effect of deterging the skin, exciting its circulation, and being immediately absorbed. He recommends to begin with one pound of soda and two or three ounces of turpentine.

In the first article of the appendix to this volume, Dr Smith allows that his faith in the antiphthisical powers of turpentine is greatly diminished (p. 68). This is not wonderful. It is more wonderful that he ever should have reposed any faith in its powers for such a purpose. This, it is to be regretted, is the mode in which the true value of a useful remedial agent is injured. Overrate its powers; say that it is good for every disease; and that there is no malady in which it is not beneficial,—and the business is accomplished; the character of the remedy is either seriously impaired, or entirely damaged.

In the second article of the appendix (B), Dr Smith elevates his testimony, most deservedly, we think, against the use of lead, either for water tubes or water cisterns. All he would have constructed of iron or stone.

In the third article, the author adds his testimony to that of many others, on the utter inadequacy of the oils, either fish liver oil or vegetable oil, to cure consumption. He mentions, however, a remedy which, though not new, forms a pleasant substitute for cod-liver oil and all the cognate tribes. This is to eat freely of boiled bacon. Some people say that an R has dropped out here, and that the prescription should be read broiled bacon.

In the fifth article (E), Dr Smith offers some good observations and information on unfermented bread, and the best mode of preparing that article. His account is well deserving of attention.

In conclusion, this small volume contains several useful hints and valuable pieces of information, and cannot fail to afford instruction to those who peruse it.

ART. V.—*On a New and Successful Treatment for Febrile and other Diseases, through the medium of the Cutaneous Surface. Illustrated with Cases.* By WILLIAM TAYLOR, Member of the Royal College of Surgeons England, and Licentiate of the Society of Apothecaries London; Surgeon to the Clerkenwell Infirmary, and to the Police of that Division of the Metropolis. London, 1850. Post 8vo. Pp. 170.

THE new Treatment which Mr Taylor recommends, consists in applying and rubbing over the skin a compound consisting of lard and common beef-suet in equal proportions, previously melted carefully over a slow fire or a water bath. The consistence of this compound, to which Mr Taylor gives the name of the Hard Ointment, may be increased during hot weather, by increasing the proportion of suet.

The great advantage of this application the author represents to be, that it does not run off by liquefaction from the surface of the skin, but is slowly diffused over it, and is rubbed in so as to saturate the skin with the ointment. To attain this object, it appears that a large quantity is required; and the friction, he adds, must be performed with vigour and energy, not by the ancient feeble crones so common in work-houses, infirmaries, and similar hospitals, but by strong, active, and enduring arms and hands.

The beneficial effects of this unctuous friction Mr Taylor represents to be very great, indeed all but marvellous. When the skin is dry and harsh, as in fever and similar disorders, and the ointment has been well rubbed in, it renders the skin soft and pliant, and the countenance indicates the favourable change by its improved expression. In short, friction with the hard ointment Mr Taylor represents to be superior either to the cold bath or the vapour bath, and we suppose the hot bath is not excluded, in restoring the functions of the skin in febrile and similar disorders. Even, he states, in typhus, scarlet-fever, small-pox, and measles, where, especially in the abodes of the poor, the atmosphere surrounding the patient exhales a heavy, disagreeable, offensive odour, after this hard ointment has been used on the skin of the sick person for twenty-four hours, the disagreeable odour is in general removed, and it is hardly perceived that the room contains a patient so seriously affected.

As soon as the skin is saturated with the ointment, all the acrid and pungent smell of the air of the apartment, which the author represents to be not only perceptible by the olfactory organs, but also as impressing the tongue, is dispelled, the fever ceases to increase, and the fear of contagion may be regarded as over.

With respect to the mode of applying the hard ointment, and the most suitable time for application, Mr Taylor finds that it is desirable to rub it night and morning, and oftener in urgent cases, on every part of the skin which is hot and dry. This should be done freely, though gently, during from half an hour to one hour at a time, and repeated until the skin is saturated. The effect of this is to render the skin soft, and, after a few applications, to give it the feeling of velvet.

The diseases in which Mr Taylor recommends the use of this unctuous friction are the following:—Common Inflammatory Fever, Typhus Fever, Scarlet Fever, Measles, Dropsy, Pulmonary Consumption, Insanity, Delirium Tremens, and Hydrocephalus. In order to illustrate the effects of the treatment, the author gives examples of diseases belonging to each of these heads, in which, under the diligent use of the hard ointment, recovery was effected.

A number of these cases, especially those of fever, scarlet fever, and measles, took place in the Clerkenwell Infirmary; and the author maintains that the employment of this method saved the institution considerable expense, by diminishing the amount of wine, spirits, and similar stimulants and cordials required, both during the treatment and during convalescence. This he justly regards as a strong argument for the adoption of the method in workhouses, infirmaries, hospitals, and other charitable institutions in which economy is an object.

Mr Taylor does not, however, neglect the use of other remedial agents, though he employs them to a very limited extent. Thus, he prescribes calomel as an aperient, saline draughts with excess of alkali, and prohibits the exhibition of all acid or acidulous articles. In the treatment of dropsy he administers blue pill, squill, and saline diuretics.

The advantages of this method of treatment are conceived to be presented in the following summary.

First, the operation of friction with the hard ointment reduces the force and frequency of the pulse, and abates the morbid heat and dryness of the skin in febrile affections; blood-letting being seldom required. It corrects the fœtid and offensive odour arising from patients; and, after its use, contagion seldom spreads, even in crowded apartments. When early employed, the fever is prevented from passing into the continued type, and the patient soon becomes convalescent. The dry and brown state of the tongue and the attendant thirst disappear, as the skin becomes saturated, and the healthy secretions of the latter are restored.

Secondly, in cases in which much vascular disturbance is accompanied by morbid pungent heat of the skin, and functional disorder in the brain, beneficial results are more speedily obtained than by any other method of treatment. The cases given by the author, he maintains, show that after a few applications of this ointment, the pulse may be reduced from 120 to 90 beats in the course of a few hours.

The patient generally insensibly falls into a calm, tranquil, and profound sleep, which lasts for from twelve to twenty-four hours, awakening apparently for the purpose of taking nourishment, and complaining only of languor and weakness. The delirium and pain have then disappeared; the skin, at the same time, has lost its morbid and unnatural heat; the thirst has become abated; and the tongue has become moist and clean.

In short, the remedy is represented to be advantageous and applicable in all fevers, and in every instance of acute inflammation where the surface is very hot and dry. The remedy then acts, in the course of twenty-four hours, as soothing the nervous system, allaying irritation, procuring sleep, and reducing the frequency of the pulse.

In the third place, the use of this agent does not interfere with that of other remedies. If collapse, the usual stimulants, as nitre, ether, musk, ammonia, and similar agents must be employed.

Lastly, the application is not attended with injurious effects.

To any objections that may be probably urged against the use of this method, that it clogs the pores of the skin, and may prevent transpiration, the author answers by saying, that he has never seen it do so, in numerous instances in which it has been employed.

In the foregoing account of this method of treating febrile diseases, we think it right, that the author should be allowed a fair and deliberate hearing for his cause. It must be allowed that Mr Taylor, according to his own showing, makes a strong case for the use of the hard ointment. But so it may be said do all advocates of new and singular methods of treatment. It would be idle to offer any remarks on the method; because, after all, its merits must be determined by actual trial and experience. Let it then be tried in situations and circumstances in which it can be conveniently subjected to trial; and let the results decide the question of its real value. After all, it is only a sort of revival of the method of the ancient JATRALIPTÆ, who are reported to have effected wonderful cures by anointing the surface of the body, and employing assiduous friction with oleaginous substances.

PART III.

MEDICAL INTELLIGENCE.

I. Pathological Chemistry.

Dr Golding Bird on the Nature and Chemical Characters of the Dumb-Bell Crystals, described as Oxalate of Lime. (Medical Gazette, 25th October 1850. Vol. xlvi., p. 700.)

Since the appearance of our last number, in which we noticed the observations of Dr Fricke of Baltimore on the dumb-bell crystals, Dr Golding Bird has published, in the Medical Gazette, a short but valuable notice on these bodies. Dr Golding Bird adheres to his original views, a little modified, that these crystals are oxalurate of lime, and not disintegrated uric acid crystals, as maintained by Dr Fricke. Dr Golding Bird has on this occasion adduced, on the correctness of his inferences, proofs which, coming from him, must be regarded as quite conclusive. Very lately having under his care a patient, whose urine deposited a large quantity of dumb-bell crystals unmixed with others, he submitted them to examination ; and obtained the following results.

1. That these crystals are a salt of lime, capable of being converted into a carbonate by ignition. (Experiments, *D* and *E*, 3 and 4.)
2. That the acid combined with the lime cannot be either sulphuric or uric acid. (Experiments, *F*, 5.)
3. That the acid combined with the lime contains nitrogen.

Dr Golding Bird, therefore, infers that these dumb-bell crystals are an oxalurate of lime; for which he conceives there is presumptive evidence, not more.

He thinks that probably the elements of oxalic acid and urea are in a nascent form combined in the blood, and thus form oxaluric acid, which is united with lime. The concluding part of the paper must be given in the words of Dr Bird.

" In this communication by Dr Fricke of Baltimore,—which, from its republication in that excellent and admirably conducted periodical the Edinburgh Medical and Surgical Journal for this month, will obtain a large circulation,—the author has declared the dumb-bell crystals to consist of uric acid. Such an opinion requires no serious refutation, as crystals which can be ignited without losing their form, but are converted into carbonate of lime, and which can dissolve in boiling nitric acid without change, cannot, even by those most ignorant of chemistry, be regarded as consisting of uric acid. It is difficult to understand how so careful an observer as Dr Fricke could have committed such an error. I should not have thus alluded to this statement had not it involved a most important indication of treatment; for it is obvious, that if the crystals in question consisted of uric acid, their therapeutical indications would be very different from that which I have assumed them to be."

It must afford pleasure to those who value accuracy to see this rectification and confirmation of his opinion by Dr Golding Bird himself.

It becomes not us to give any opinion on a subject on which none but an expert chemist ought to give an opinion. But we may be permitted to say, that the paper by Dr Fricke bears internal evidence that that gentleman had not carefully examined the work of Dr Bird, nor had the editor of the Journal in which it appeared, taken pains to read the statements of Dr Golding Bird.

II. MEDICAL PATHOLOGY.

On the Causes of the Endemic Puerperal Fever of Vienna. By C. H. F. ROUTH, M.D. (*Medico-Chirurgical* Transactions, Vol. xxxii., Art. ii., p. 27.) London, 1849.

It is well known that in Vienna puerperal fever has at several times, during the last sixty years, been a most unmanageable and rapidly and certainly fatal disease. The causes of this peculiar fatality have been sought in various circumstances; but, in the present paper, Dr Routh, in accounting for the origin and propagation of the disease, has probably thrown some light on the circumstances which render it in this city so common. Dr Routh premises that the remarks apply especially to Vienna, although it may be believed that similar causes are brought into operation in other countries, and might as effectively be opposed.

A short exposition of the manner in which his labours are conducted in the Vienna hospital, and the system of clinical instruction carried on, is requisite, in order to understand the influence of the causes assigned by Dr Routh.

In the general hospital at Vienna there are three lying-in departments. The first, a secret department, to which strangers are not admitted, and which, therefore, requires no further comment. The remaining two are open to medical investigation. For the sake of clearness, we shall speak of one of these as the *first divison*, and of the other as the *second division*.

The *first division* is for the instruction of medical men and midwives. The *second division for midwives exclusively*. In the former there are about twenty or thirty medical men, and eight midwives. These midwives, in addition, perform other menial duties. There are, besides, about sixteen nurses employed in the various wards to attend upon the patients. The wards in this division are eight in number. They are large and airy.

In the *second division*, or that *exclusively* intended for midwives, their number is about twenty-eight, but in other respects the arrangements are entirely similar to those of the first division, with this exception, however, which it is important to bear in mind, that the wards are neither *so large nor so airy.*

The following table exhibits the average number of deliveries and the amount of mortality per month :

Number of deliveries in each division.	First division—Mortality.				Second Division—Mortality.			
	Ordinary.		Occasional.		Ordinary.		Occasional.	
	Actual number of deaths.	Proportion to deliveries.	Actual number of deaths.	Proportion to deliveries.	Actual number of deaths.	Proportion to deliveries.	Actual number of deaths.	Proportion to deliveries.
From 250 — 300 mean 275	about 30	1 in 9.16	about 70	1 in 3.92.	about 7 to 9 mean 8	1 in 34·37.	about 3	1 in 91.66

In one particular year, indeed, out of some 3000 cases delivered, about 500 died in the first division. While in the second division, out of the same number delivered, the deaths frequently did not exceed forty. These numbers are only approximative, as for obvious reasons the statistics are kept secret.

The clinical instruction is conducted in this manner. In the *first division* the management of labours is thus regulated: four of the midwives are reserved for the night duty, and four for the day duty, and each of these must, in her turn, deliver a woman; but one is moreover called upon every eight days to act as the "*Journalistin,*" *i. e.* to watch and examine every case in labour admitted during a period of twenty-four hours. Two gentlemen (sometimes only one) are called upon to exercise, conjointly with the midwife in question, a similar function. In the discharge of this duty, they are allowed to repeat these examinations as frequently as they deem it necessary. When the membranes are ruptured, the midwife, according to order, is called to deliver the woman, and one gentleman (formerly there were two) is also in attendance to witness the delivery. This is what is called "*taking a tour,*" and these parties are again allowed to make examinations, if they think fit. Again, the professor during his morning visit, and the assistant during the evening visit, not unfrequently make or allow examinations to be made, by the gentlemen present, whenever a case of interest presents itself. Practically, therefore, every woman admitted must needs be examined by some five different persons at least, and this number may be doubled or even trebeled. The practical instruction is also given in a private course, where the operations are performed upon the *dead body of some female.*

The clinical instruction in the second division is conducted on precisely the same general plan, and the examinations made are as frequent, if not more so; but the *practical instruction* is given and the operations performed upon the *leather phantom*, and *not* upon the *dead body.* This last fact it is important to remember. These details may appear somewhat tedious, but they bear too much upon the sequel to be omitted.

The frightful mortality in the first division, as compared with the second division, became at last so notorious, that many females refused to become patients in the former, and public opinion compelled the Austrian government to make it a subject of inquiry. The commission appointed for that purpose came to the conclusion that the prevalence of the fever was due to the excess of students in attendance, and their number in consequence was reduced from forty to about thirty. The same disproportion in the mortality of the two divisions, however, still continued, so that it was evident to all that the true cause had not been discovered.

This singular difference between the two divisions could not fail to occupy a large share of the attention of the profession, the more so, as analogous examples were traced, or were supposed to have been found, in other countries. Thus, in Prague, where two divisions also existed, it was said that the mortality was even greater than in Vienna, in the division for medical men; while in that for midwives exclusively, it was but small. In Strasburg, likewise, the author was informed by Dr Wrieger, a practitioner of that city, where there are also two divisions, that the same difference of mortality was observed, so much so, as to make it sometimes imperative to close the division for medical men, for the purpose of disinfecting the wards; while in that for midwives puerperal fever was very rare. The proverbial mortality in the "Hopital Clinique" of Paris, where medical men and students only are in attendance, was supposed to afford melancholy proof of the baneful results consequent on the attendance of male obstetricians. The first and most natural presumption seemed to be that the fever was excited in the first instance by the rough manipulations of men-midwives, these setting up inflammation about the generative organs, which, by extension upwards, gave rise to puerperal fever; while the manipulations of the female hand being more gentle, no such unfortunate complication followed in the cases they attended. A very little reflection and a positive example to the contrary at once disproved this supposition.

1st. As Dr Semelweiss remarks, if it were so, it is evident that, in all cases of difficult or instrumental labour, puerperal fever would result, whereas this is by no means the general rule.

2d. Male obstetricians are, for the most part, persons whose anatomical and physiological knowledge of the parts concerned in labour exceeds that of midwives, and to whom therefore a diagnosis, by being so much more easily and speedily made, does not necessarily require so much manipulation, so that one of the chief causes of inflammation, and consequently of puerperal fever, is thus avoided.

3d. This fever is comparatively rare in the private practice of accoucheurs

4th and lastly. The positive example to the contrary is afforded us by the Hopital de la Maternité, at Paris, where the ordinary labours are exclusively conducted by midwives, and where the disease is of very frequent occurrence.

It must, therefore, be concluded that there is no evidence to show that the roughness of the manipulations of male obstetricians is the cause of puerperal fever.

Contagion.—That the contact of *fomites*, the direct or indirect communication with persons affected with puerperal fever; that some influence carried, either by the patient herself or her attendants, from other contagious diseases, such as erysipelas, typhus, and other low fevers, has in many cases given rise to puerperal fever among lying-in patients, are statements that have often been made. Drs Copland, Collins, Rigby, Lee, Gooch, Ferguson, Blackmore, Peddie, Mr. Storr, and a host of other writers, have related several cases of this kind. Again, Dr E. Murphy, of London, has shown that in the late epidemic of Dublin, when the medical man in attendance on a puerperal fever case visited another female in labour, and delivered her in the same clothes in which he had attended the first, he almost invariably communicated the fever to her. This fact was peculiarly exemplified in the case of a German student, who was following the midwifery practice in and out of the hospital, and being rather neglectful in his habits, and not changing his clothes as desired, invariably communicated the fever to all the cases he attended, whereas with others, who were more careful in this respect, no such unfavourable results occurred.

The author was aware of these facts, and made particular inquiries on the subject in Vienna; but whether it was due to the peculiar variety of the Vienna fever or not, the information he obtained was altogether nugatory in regard to this view. At first, indeed, it did appear probable that it might be induced by the contagion of typhus, which is known to be one of the most common and fatal diseases in Vienna. He could not, however, hear of a single case of puerperal fever that could be traced satisfactorily to this contagion, nor conversely of a single case of typhus occurring in any of the nurses or attendants of the cases affected with puerperal fever.

2d. Propagation by the clothes of the attendants is disproved by the method of tuition in Vienna. The medical men and midwives in the first division are continually by the bedside of the puerperal fever cases, and generally in the same dress. Indeed the author, amongst many others, kept a particular dress for doing duty in that hospital, and he never had reason to believe that he had been the medium of contagion.

Moreover, he has negative evidence to the contrary, *i. e.* of having frequently made a careful medical examination of a patient affected with most malignant puerperal fever, and remained by the bedside for several minutes together, and subsequently examined some ordinary case in the ward, and yet the disease was not communicated.

3dly. The Strasburg Hospital seems to disprove the contagious nature of the disease. Here it has generally been observed (and that usually every two years), that the fever becomes so pestilential as to require the closure of the establishment for the purpose of disinfecting the wards. The females who at the time may be affected with puerperal fever are then removed to the division for midwives. Experience has shown that in such instances the disease does not spread. This statement is made upon the authority of Dr Wrieger, of Strasburg.

4thly. Allusion has been already made to the eight midwives and sixteen nurses, in the first division at Vienna. The former must, by law, be married women; and it is believed the same rule applies to the nurses. At any rate, it frequently happens that they become pregnant. Here we have persons in constant attendance upon the puerperal fever cases. Most, if not all, of these are usually confined in the hospital; the only difference in their case being, that they are generally delivered by one of the head-nurses, apart in a private ward, and that the medical men do not assist in the confinement. Now, although we have the means of contagion present here in an eminent degree, the author was, on careful inquiry, unable to hear of a single case where one of the nurses or midwives had puerperal fever.

5thly and lastly. The only facts which appears to give countenance to the view of contagion is the following. It often occurred that the infant of the female affected with puerperal fever died at the outset of the mother's illness; and, in such cases, a post-mortem examimation of the infant proved death invariably to have resulted from peritonitis. The fact is important, when taken in connection with the occurrence of peritonitis in husbands exposed to the contagion of puerperal fever from their wives, as noticed by Mr Storr. But here the evidence is not sufficiently clear to allow us to attribute the result to mere contagion. As there are good grounds for believing that the lochial discharge in ordinary puerperal fever is intensely poisonous in most cases, as also puerperal abscesses, &c., and that there is every reason to believe that the entire mass of the blood is poisoned in such cases; that, on the other hand, the child is very easily affected by any morbid qualities of the mother's milk (which, of all secretions, is, perhaps, that most easily modified by the state of the mother),—it seems more correct to conclude that the milk in this case becomes an animal poison to the child, the peculiar effect of which (in the same manner as cantharides may produce an inflammation of the urinary passages) is to produce peritonitis.

Infection.—Infection, properly so called, that peculiar morbid atmospheric influence which extends beyond the range of personal communication, through the respiratory organs perhaps, and which is distinct from epidemic influences, as well as from true contagion,—this influence could be unequivocally shown to exist in the Vienna Hospital. Many of the facts already adduced in speaking of contagion go far to disprove infection also; such as the non-occurrence of puerperal fever among the nurses. Moreover, the circumstances known to favour infection, *i. e.* want of cleanliness and ventilation in the wards, are absent. The patients are delivered in a ward especially set aside for that purpose. Moreover, on removal clean sheets are always given. The lying-in chamber is partly cleaned every morning, thoroughly every three or four days, and even the very straw mattresses are changed;

and so it is with every ward. It may reasonably, therefore, be said that the greatest cleanliness prevails throughout the department; and generally the moment a patient becomes really sick with malignant puerperal fever, she is at once removed into a separate apartment. But, secondly, we have a strong argument against infection exerting so powerful an influence, in this fact, that if these regulations were inefficient, the disease ought to be infinitely more frequent and fatal in the division for midwives, where the wards are altogether less roomy and less airy. These considerations, it is believed, warrant the conclusion, that infection cannot be rightly looked upon as the cause which originates the puerperal fever of Vienna.

Direct application of poisonous matter, or inoculation.—Dr Blackman, of Edinburgh, it is believed, was the first who distinctly stated that it was probable, the medical attendant might communicate the disease, by retaining a portion of poison, *subter ungues*, which he subsequently directly applied on making an examination *per vaginam.*[*] Though this fact may have been suspected by many others, yet, so far as the author is aware, he believes that it was first clearly enunciated by Dr Semelweiss, the assistant-physician of the first obstetric division at Vienna. Reasoning upon some of the facts before noticed, Dr Semelweiss was led to infer, that the real source of the infection was to be found in the hands of the medical men in attendance contaminated with cadaveric poisons; these gentlemen having all more or less diligently attended the numerous autopsies in the dead-house, and frequently handled, as a matter of course, the specimens of disease found. Now, Dr Semelweiss remarks that, after handling dead matter, the hands, however well washed, still retain a peculiarly fetid cadaveric odour, which does not disappear for several hours, and sometimes not till the next day. The presence of this smell implies the retention on the surface, or imbibition by the epidermis, of a quantity, however small, of cadaveric matter. Again, when it is remembered that in many dead-houses, from the absence of a nail-brush, frequently of soap and warm water, the hands cannot be properly washed, it is exceedingly probable that a portion of this cadaveric matter is retained under the nails; and it is very easy to understand how, on examination made subsequently *per vaginam*, this poison should be directly and effectively applied. In this manner he supposed the disease was so frequently generated in the wards of the first division, and explained the sanitary condition of the second division, since the midwives made no autopsies, and worked on the phantom, and so did not get their hands infected with cadaveric matter.

Acting upon this belief, Dr Semelweiss recommended all students frequenting the division not to handle dead matter, or if they did, he forbade them to make any examination till the following day. In the second place, he directed all the students who attended the practice of the division to wash their hands in a solution of chlorine prior to and after every examination made on the living subject. The result of these precautionary measures was that the number of deaths at once fell to seven per month, or the usual average of the second division. This fact explains the difference of mortality of the two divisions at Strasburg. Here, likewise, although the medical men in attendance do not dissect, yet they perform operations on the dead body and autopsies, whereas the midwives do not. The difference of the mortality at Prague may also be so accounted for. The apparent exception of the Maternité at Paris is also explained, since the midwives in that institution do dissect and perform the autopsies; and with regard to the

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[*] Prov. Med. and Surg. Journal. No. xxv. 1845.

Hôpital Clinique at Paris, the known zeal of the French students for anatomical inquiries, coupled with their general indifference in the selection of bodies for dissection, will also fully account for the frightful frequency of puerperal fever in that hospital.

In Great Britain many of the cases reported and ascribed to contagion from typhus or erysipelas, may in reality have been caused by the direct inoculation of poisonous secretions derived from gangrenous wounds in such cases, with which the hands of the medical attendants, who had previously dressed these wounds, had been accidentally infected.* This view of the case derives some additional confirmation, from the similarity or analogy of the symptoms of puerperal fever with those arising from a poisoned dissection wound.

This poisonous matter may be absorbed in several ways. Through the absorption of the mucous membrane of the vagina, or more directly through trivial wounds about the generative organs, such as the lacerated fourchette in primiparæ, lacerations of the cervix or *os uteri*, or the extended inner surface of the uterus deprived of its decidua and placenta; all these parts, both from the general nervous shock and the removal of local congestion, being in a highly favourable condition for absorption.

The feverish symptoms usually occurred on the second or third day after labour; yet cases were noticed where they did not occur before the seventh and even fourteenth days. Generally, the fatal result did not take place before the fourth or fifth day after seizure, but sometimes it occurred as early as twenty-four hours after the first appearance of the fever. Diarrhœa generally preceded the attack, but sometimes, though rarely, the patient was costive. Then followed general langour, and a feeling of weakness, rigors; and the pulse was usually from 120 to 130 in the minute, sometimes, however, as high as 160, very weak. The patient's countenance assumed a peculiarly anxious expression; there was pain generally about the uterus, either in the organ itself or in the peritoneum about it. As these symptoms increased in intensity, heat set in, with dry tongue, loss of appetite, thirst, &c. The lochia were very seldom affected either in quantity or appearance. The lacteal secretion continued undiminished, and apparently unaltered. Indeed, if at the outset of the disease the skin was observed to be rather drier than usual, this symptom did not last; the perspiration becoming subsequently more copious than otherwise, and continuing so up to the hour of dissolution. Large violet maculæ occurred sometimes in the extremities. In some cases the intellect was affected, but this was of very rare occurrence, as it usually continued clear up to a very few minutes before death. The more marked local symptoms were those of peritonitis, which gradually increased in intensity. The pain generally disappeared an hour before death; the face gradually assuming a more sallowish, yellow, and cadaveric expression.

The appearances presented by the dead body were generally the following.

Arachnitis in a slight degree. Occasionally endocarditis, very generally pericarditis. Almost always some pleuritis or pneumonia. Liver and spleen healthy. Extensive peritonitis, with plastic adhesions, and sero-purulent fluid in the abdominal cavity. The uterus was much enlarged, much softened, and tearing very readily, containing pus in the veins, especially in the neighbourhood of the Fallopian tubes. The inner surface was of a yellow-whitish colour, with here and there plastic exudation. Sometimes the lymphatics proceeding along the spine were beaded in appearance, containing pus. Where death occurred early, there was generally only some muddy-looking fluid in the abdominal cavity, with endometritis, and occasionally pus in the uterine veins. Sometimes the case was one of pure peritonitis, the uterus being scarcely affected. The body was very prone to decomposition; its external surface mottled, especially at the extremities; the superficial veins very apparent, of a dull bluish-red colour. The blood generally liquid, and very dark, not coagulating after exposure.

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* Dr Peddie's case, Edin. Med. and Surg. Journal, Vol. lxv., p. 78, 1846.; M Storr's case, Prov. Med. and Surg. Journal, No. clxvi. 1843.

The fever was not equally intense in all cases. This might be due to the idiosyncrasy of the female, or to the variety of the poison. Indeed, Dr Semelweiss thought he had observed that the inoculation of cadaveric matter from cases of typhus, erysipelas, and puerperal fever was most fatal.

The author, therefore, although he is perfectly willing to admit that the fever, like all other fevers, may be very much modified by epidemic influences, thinks himself justified in concluding—

In the first place, that—1. The puerperal fever of Vienna may be looked upon as an endemic fever.

2. That it is produced by the direct application of poisonous cadaveric matter, introduced by the hands of the male obstetricians in attendance.

3. That the cadaveric matters derived from the bodies of persons dead of typhus, erysipelas, puerperal or other low fevers, are peculiarly dangerous; but that there is no evidence to show that any ordinary cadaveric matters may not produce it.

4. That it does not appear to be either contagious or infectious.

And, in the second place, as the precautionary measures adopted by Dr Semelweiss have produced satisfactorily results, that—

1. Accoucheurs should as much as possible avoid making autopsies, and all contact with cadaveric matter.

2. They should never attend any woman in labour in clothes which may possibly have been infected; but, especially if compelled to handle cadaveric matters, or other poisonous secretions from living persons, they should, prior to any examination made *per vaginam*, not be satisfied with washing their hands most carefully, and subsequently greasing them, but also make use of a solution of chlorine, to disinfect the hand from any poisonous matters with which it may have become contaminated, before they enter the lying-in bedchamber.

April 29, 1849.—Accounts which reached Dr Routh through Dr Tumanhof, in June 1848, confirmed in every respect the favourable results obtained from the adoption of Dr Semelweiss's precautionary measures. And in a letter since received from Dr Golling, Secundarius to the hospital, bearing date December 24th, 1848, it is stated that the precautionary measures continued to be successful. The origin of the Vienna puerperal fever seems therefore to be fully established.

May 21, 1849.—In a letter received from Dr Semelweiss since, dated March 4th, 1849, the following statistics are given: In one division (the first division)—

	Females		
In 1846 there were admitted	3354	and there died	459
1847	3375	"	176
1848	3356	"	45

It was not till the end of May, 1847, however, that the chlorinated lotions were employed. Thus, it appears, that the mortality has diminished in an extraordinary manner.

Professor Michaelis, of Kiel (Schleswig-Holstein), writes that from the time he has employed chlorinated lotions, which extends over a space of several months, he has only lost one female; though, prior to that period, the mortality was so great, that he was considering whether it would not be right to close the hospital altogether.

III. TOXICOLOGY.

Case of Fatal Poisoning by Sir William Burnett's Fluid (Solution of Chloride of Zinc.) By H. LETHEBY, M.B., &c. (Medico-Chirurgical Transactions, Vol. XXXIII. p. 283. London, 1850.)

In the 70th volume, p. 335, of this Journal, Dr Stratton relates two instances of poisoning from the unguarded use of Sir W. Burnett's disinfecting fluid; but in both cases recovery took place. In the following instance the solution produced fatal effects.

On Thursday the 16th of August 1850, Mr Miller of Eye in Suffolk was hastily requested to visit the child of a poor unmarried woman resident at Reddingfield, a neighbouring village. When Mr Miller arrived, between ten and eleven A.M. of the day mentioned, he found a little girl, aged fifteen months, in a semicomatose state, with the countenance pale and anxious, the breathing thoracic and rapid, the pulse quick and fluttering, and the surface of the body cold and covered with perspiration. The lips were swollen; the mouth was covered with thick transparent mucus; the inner surface of the lips and the lining membrane of the mouth presented an opaque white appearance, as if they had been acted on by some caustic or corrosive substance. The child had been quite well early in the morning; and it had been suddenly attacked about one hour and a half before Mr Miller's visit, with violent sickness. These facts led Mr M. to infer that the child was under the effects of an irritant poison; and the inference was confirmed by one of the attendants producing a bottle of Sir W. Burnett's disinfecting fluid, which had been supplied to the mother about eight or ten days previously, when some persons affected with fever were in the house.

When roused from its lethargy, the child requested cold water, which she held in her mouth with apparent satisfaction; but on attempting to swallow the water, the greater portion was returned by the nostrils. The throat appeared something swelled; and the child frequently raised her hands to the neck.

Mr M. endeavoured to administer a solution of albumen; but the fauces were so swelled and constricted, that little or none passed into the stomach. He observed also that the white of egg employed was coagulated by the fluid matters which still adhered to the mouth. The child occasionally vomited a frothy liquid like curds and whey, and at such times it was roused from the heavy drowsy state; but the coma gradually became more deep, the breathing more slow, the pulse more feeble, the surface of the body colder; and at seven o'clock in the evening the child died, ten hours after the first appearance of the symptoms.

The body, inspected twenty-two hours after death, presented the following appearances.

The body was plump and well developed; the face was pale and somewhat swelled. On the lower lip was a dark brown crust, the effect of the action of the liquid. The lining membrane of the lips, mouth, fauces, and œsophagus were of an opaque white colour.

The lungs were slightly congested. The auricles of the heart were full of dark semifluid coagula; and the ventricles were empty.

The outer surface of the stomach presented a peculiar mottled appearance from ramifications of dark coloured purple vessels. The intestines looked paler than natural. The stomach, which felt hard and leather-like, contained one ounce and a half of fluid resembling curds and whey. The inner surface of the organ was corrugated, opaque, and tinged of a dull leaden colour. This appearance stopped abruptly at the valve of companied by morbid pungent heat of the skin, and functional disorder in the brain, beneficial results are more speedily obtained than by any other method of treatment. The cases given by the author, he maintains, show that after a few applications of this ointment, the pulse may be reduced from 120 to 90 beats in the course of a few hours.

The patient generally insensibly falls into a calm, tranquil, and profound sleep, which lasts for from twelve to twenty-four hours, awakening apparently for the purpose of taking nourishment, and complaining only of languor and weakness. The delirium and pain have then disappeared; the skin, at the same time, has lost its morbid and unnatural heat; the thirst has become abated; and the tongue has become moist and clean.

In short, the remedy is represented to be advantageous and applicable in all fevers, and in every instance of acute inflammation where the surface is very hot and dry. The remedy then acts, in the course of twenty-four hours, as soothing the nervous system, allaying irritation, procuring sleep, and reducing the frequency of the pulse.

In the third place, the use of this agent does not interfere with that of other remedies. If collapse, the usual stimulants, as nitre, ether, musk, ammonia, and similar agents must be employed.

Lastly, the application is not attended with injurious effects.

To any objections that may be probably urged against the use of this method, that it clogs the pores of the skin, and may prevent transpiration, the author answers by saying, that he has never seen it do so, in numerous instances in which it has been employed.

In the foregoing account of this method of treating febrile diseases, we think it right, that the author should be allowed a fair and deliberate hearing for his cause. It must be allowed that Mr Taylor, according to his own showing, makes a strong case for the use of the hard ointment. But so it may be said do all advocates of new and singular methods of treatment. It would be idle to offer any remarks on the method; because, after all, its merits must be determined by actual trial and experience. Let it then be tried in situations and circumstances in which it can be conveniently subjected to trial; and let the results decide the question of its real value. After all, it is only a sort of revival of the method of the ancient JATRALIPTÆ, who are reported to have effected wonderful cures by anointing the surface of the body, and employing assiduous friction with oleaginous substances.

PART III.

MEDICAL INTELLIGENCE.

I. PATHOLOGICAL CHEMISTRY.

Dr Golding Bird on the Nature and Chemical Characters of the Dumb-Bell Crystals, described as Oxalate of Lime. (Medical Gazette, 25th October 1850. Vol. xlvi., p. 700.)

Since the appearance of our last number, in which we noticed the observations of Dr Fricke of Baltimore on the dumb-bell crystals, Dr Golding Bird has published, in the Medical Gazette, a short but valuable notice on these bodies. Dr Golding Bird adheres to his original views, a little modified, that these crystals are oxalurate of lime, and not disintegrated uric acid crystals, as maintained by Dr Fricke. Dr Golding Bird has on this occasion adduced, on the correctness of his inferences, proofs which, coming from him, must be regarded as quite conclusive. Very lately having under his care a patient, whose urine deposited a large quantity of dumb-bell crystals unmixed with others, he submitted them to examination; and obtained the following results.

1. That these crystals are a salt of lime, capable of being converted into a carbonate by ignition. (Experiments, *D* and *E*, 3 and 4.)
2. That the acid combined with the lime cannot be either sulphuric or uric acid. (Experiments, *F*, 5.)
3. That the acid combined with the lime contains nitrogen.

Dr Golding Bird, therefore, infers that these dumb-bell crystals are an oxalurate of lime; for which he conceives there is presumptive evidence, not more.

He thinks that probably the elements of oxalic acid and urea are in a nascent form combined in the blood, and thus form oxaluric acid, which is united with lime. The concluding part of the paper must be given in the words of Dr Bird.

" In this communication by Dr Fricke of Baltimore,—which, from its republication in that excellent and admirably conducted periodical the Edinburgh Medical and Surgical Journal for this month, will obtain a large circulation,—the author has declared the dumb-bell crystals to consist of uric acid. Such an opinion requires no serious refutation, as crystals which can be ignited without losing their form, but are converted into carbonate of lime, and which can dissolve in boiling nitric acid without change, cannot, even by those most ignorant of chemistry, be regarded as consisting of uric acid. It is difficult to understand how so careful an observer as Dr Fricke could have committed such an error. I should not have thus alluded to this statement had not it involved a most important indication of treatment; for it is obvious, that if the crystals in question consisted of uric acid, their therapeutical indications would be very different from that which I have assumed them to be."

It must afford pleasure to those who value accuracy to see this rectification and confirmation of his opinion by Dr Golding Bird himself.

In 1832, I saw a number of cholera cases at North Shields, and during the winter of 1848-9 I was a very frequent visitor of the Edinburgh General Cholera Hospital, which was under the charge of Dr William Robertson. On the 30th of May 1849, I arrived in a ship from London at Grosse Isle (near Quebec), and Dr Douglas showed me the passengers of two emigrant-ships which arrived there a week before, and on board of which cholera had broken out during the passage; in one ship forty deaths took place, and in the other thirty deaths; in both vessels all at once; no new cases occurred, and none afterwards; this was on the occasion of the ships coming into colder and damp weather on the Banks of Newfoundland. The ships were not near each other; the number of persons on board of each was about 250 or 300. I regret that I did not note the names of the ships, the exact number of persons on board, the port whence they sailed, and whether cholera was then prevailing there. The ships were kept for a week in quarantine under observation, and no new case occurred, which was three weeks after the last case. The instance of these two vessels bears on the disputed question of whether cholera is infectious or not. Anti-infectionists will regard these two instances as in favour of their views, from the disease suddenly ceasing and not continuing almost indefinitely to reproduce itself among the other passengers, as it ought perhaps to have done if propagable by infection. Infectionists, however, will say that all the subjects predisposed or capable of receiving the disease were attacked, and that 40 deaths in 250 or 300 persons were as many as the epidemic cause, aided in some cases by infection, might be expected to produce. In both vessels, the disease broke out suddenly some time after sailing, and it prevailed for about ten days only. Did these ships sail into a choleragenic body of air of a diameter represented by a ten days' sail? Or, instead of this, did a choleragenic stratum of air blow on the vessels' track and remain with them for the ten days, and then leave them?

I was in Montreal * when the epidemic commenced there in the beginning of July, and during a week I spent in New York in the same month the public alarm was very great at the number of attacks, and many in the liner, in which I sailed from New York, were glad to leave the scene of so much risk and danger.

Topographic Sketch.

A stranger arrives by rail from London in an hour and a-half, and sees the town of Strood, which is connected by a bridge over the Medway with the city of Rochester; entering Rochester, he sees on his right, Fort Clarence, and the interesting Norman ruins of Rochester Castle. Driving through the cleanly High Street of Rochester, he sees on his right Fort Pitt and then enters the High Street of Chatham, which, on the right, is quite continuous with Rochester; on the left a few acres of low-lying ground, occupied by market-gardens, intervene between the street and the Medway. This ground is only a foot or two above the usual high-water level, and I was informed that the gardens are leased on the terms, that the rent is to vary according to the injury done the crop by the overflowing of the river. At this point, on the other side of the street, the boundary-line between Rochester and Chatham is close to St Bartholomew's Chapel, the Chapel of St Bartholomew's Hospital, the ancient Leper Hospital of Chatham, of which I intend to send an account to a future number of this Journal. Fort Clarence is situated on a considerable eminence behind Rochester, and is perhaps 300 feet above the level of the Medway. It was built in 1800, and some time after was used as a military lunatic asylum. It is now used as a military prison, and soldiers are sent to it from all adjacent parts. (There are other three general military prisons in England, one in Scotland, and two in Ireland). My friend, Dr Swan of the Army Medical Staff, is at present its medical officer. As marines from Woolwich and Chatham are sent thither, a few remarks on the establishment may be here permitted.

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* There is an interesting paper on Cholera, by Dr Hall of Montreal, in the *British American Medical Journal* for August 1849.

The prisoners are divided into three classes; the third or worst class are at hard labour, employed in carrying a shot of the weight of thirty-two pounds; the second class carry a twenty-four pound shot; the first or best class are not put to this kind of punishment; they are three hours a-day so employed, half of the time in the morning, and the other in the afternoon. Weakly men are not ordered this shot exercise. A few of the prisoners are employed at trades, as tailors, shoemakers, and carpenters, but only so far as any of this kind of work is required within the prison. The prisoners are not allowed to converse with each other. When they are locked up, each man is placed in a separate cell, which has an arched roof, and is quite free from damp, as over this is a slated roof; the cells are warmed by means of heated air, and gas is burnt in them till eight in the evening. There is a school for giving instructions to some of the men in the evenings.

The men carry the shot a little distance,—about ten paces,—lay it down, pause for a minute or two, then take it up, and carry it back again. This kind of labour being entirely useless is likely to be mentally-irritating to those engaged in it. Would it not be better to employ them at their respective trades when they have any?—and for the others, who have not been brought up to any trade, and do not understand any kind of skilled labour, productive occupation might be found in picking oakum or in breaking stones for the roads,—this being, for several reasons, to be preferred to the vain labour of *piling shot*, an occupation somewhat like that to which Sisyphus the son of Æolus was condemned in a certain place. The pecuniary returns from the labour might go towards the prison expenses, and a small proportion of it to the prisoners themselves for their encouragement. I understand that *shot-drill* is the name officially given to this kind of punishment; the word *drill* ought not to be associated in the soldier's mind with any kind of punishment, and on this account, the name is objectionable. This kind of bodily exercise seems likely to induce hernia in those disposed to it.

Fort Clarence is supplied with water from a deep well within the fort, the pump being worked by five or six prisoners, and not, as in Fort Pitt, by horses. The view from Fort Clarence is very commanding and beautiful, looking down on Rochester cathedral and castle, the river Medway; on one side the undulating surface of Kent, aptly styled the garden of England, and on the other the *Chathamic* cluster of towns. There is a supposition that an underground passage leads from the fort and opens close to the high water mark in the river; also, that another underground passage connects this fort with the neighbouring one.

In this elevated situation, one severe case (Moss, private, Royal Marines), and two slighter cases of cholera occurred, and likewise a good many cases of diarrhœa. All these cases originated in the fort. The amount of intercourse or communication between the fort and the town of Chatham was that the officials and servants were in the habit of visiting it, as usual, and the military guard over the prisoners was as usual changed every twenty-four hours, and was supplied from the Chatham line-barrracks or some of the other barracks. The total number of persons living in the fort might be about 150.

At a short distance from Fort Clarence is situated Fort Pitt. Fort Pitt was built about the year 1800, and was named after the great statesman who took his titular name from Chatham. It looks down upon the back part of Chatham; it is now used as a military general hospital, chiefly admitting invalid soldiers arriving from abroad. In a sanitary view the hospital is in an excellent position, except perhaps that for invalids with chest-complaints, arriving from hot climates, the situation is rather exposed. As the hospital-buildings were built for barracks, the wards have some defects which they would not have had, if they had been erected for their present purpose. The windows are very high above the floors, lessening the cheerfulness of the rooms. The surrounding ground is laid out in a very ornamental manner in walks and shrubberies, and the convalescents are allowed to roam about over them. This must have an excellent effect in aiding the restoration to health of soldiers returning with chronic diseases from abroad. This plan of laying out the ground surrounding an hospital, and the system of making this use of it afterwards, is well worthy of imitation by similar institutions in other places.

A large museum of morbid anatomy, natural history, and foreign curiosities has been formed and supported by the industry and liberality of the army medical officers, who have also an excellent library and reading-room. Before receiving their commissions, the future assistant-surgeons of the army are here for a period varying from a few weeks to as many months; including eight or ten candidates, there are twenty-four medical officers at present connected with this medical depot.

There are about 200 patients in the hospital; besides resident patients, there are in the course of the year many hundreds of soldiers arriving here to be invalided; a medical board inspects them, some are discharged from the service, and others are sent back, after more or less time, to their respective regiments.

Fort Pitt is probably about 300 feet above the level of the river; it is supplied with water from a deep well within the fort, the pump being worked by three horses. I believe the inmates of the fort were about 300 in number. In this high situation there were five deaths from cholera. Three soldiers and two wives of soldiers died of cholera. The two female cases were taken to Fort Pitt hospital from the town of Chatham; two of the male cases also were admitted sick into Fort Pitt from St. Mary's barracks. Two cases of cholera originated in the Fort, one was fatal; the other recovered; one was an orderly, the other was one of the patients, and neither of them had been near the cholera patients. Among the non-invalid inmates of the fort, there were about 30 cases of diarrhœa during the prevalence of the epidemic. Surgeons Dartnell, Jameson, and Macdiarmid were among the medical officers here at the time. I shall first give a brief account of each of the public establishments, and then offer a few remarks on the different towns here.

Passing down the hill from Fort Pitt, we cross the High Street of Chatham, which is in the bottom of the valley, and then gradually ascend what is called the military road, passing on the left the Marine barracks, and on the right Chatham line-barracks, then Melville Hospital on the left, and then enter the town of Brompton, at the farther end of which are Brompton barracks. Still farther on, and towards Gillingham are situated:—

St. Mary's Barracks are close to the river, in a site not very desirable. They can accommodate about 400 men, besides women and children. At present they are very crowded; I understand they are occupied generally by transient invalids, before and after their being examined at Fort Pitt. In St Mary's barracks, a soldier's son, aged eleven, died of cholera; and two soldiers ill of cholera were sent to Fort Pitt, where they died.

Brompton Barracks surround a large, beautiful, and airy barrack square, built at first by the Hon. East India Company, and now occupied in part by some of their depots, and by the Royal Engineers, Royal Artillery, Sappers and Miners, and also by a few men of different regiments At present* about 150 men of the Royal Marines sleep here, as their own barracks are crowded; but they mess in the marine barracks, and are supposed to be there the greater part of the day. The Brompton barracks are supplied with water from a deep well on the spot; their situation is very high and healthy. There are about 500 men here; they had two cases of cholera, one in an artilleryman, and the other in a sapper. During the epidemic the soldiers frequented as usual the town of Brompton, but were not allowed to enter the town of Chatham; this arrangement involved their not visiting Rochester and Strood.

Passing through the High Street of Brompton, and descending the military road, we come to the

Chatham Line-Barracks are called line-barracks to distinguish them from the marine barracks. They are well situated on the slope of a hill, and, Major Smith, barrack-master, informs me, contain accommodation for 2800 men. At present they contain H.M. 17th regiment, the depots of a number of regiments, and many detached men belonging to various regiments, altogether about two thousand men. There are also about four hundred women and children. The garrison-hospital is well placed at the upper and east corner of the barrack-ground. The *Spur Hospital*, another military hospital, is near it. In the garrison-hospital a soldier of the 96th regiment and one of the 53d regiment, died of cholera. Thus there were two fatal cases of cholera among 2400 persons. These barracks are supplied with water from the Melville Hospital reservoir.

Marine Barracks.—The lower wall of the line-barracks runs along the military road, on the other side of which are the Marine barracks, exactly parallel to the other, and situated lower down the hill. On entering the gate, the visitor sees a very fine parallelogram, one side of which has a railing between it and the road; the two ends are occupied by officers' quarters, and the opposite side by a range of building, being the men's barrack. In front this building is of three storeys and a sunk storey; to the rear, as the ground falls, it is of four storeys. Behind this building and nearer the river is a narrower parallelogram, on the other side of which is a long narrow building, chiefly for store rooms; the other side of this building is close to the Medway. At the east end of the barracks, the road leading to the *New Stairs* separates them from H.M. Dockyard. At the west end of the barracks the back part of the buildings forms one side of Church or Cat Lane, where one of the earliest cholera deaths occurred (Aug. 5), and whence, I believe, the two fatal female cases were conveyed to Fort Pitt. These barracks are supplied with water from the same well, whence is filled the Melville Hospital reservoir. The proportion of cases to men, and the localities in the barracks furnishing the cases will be mentioned afterwards.

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* I beg to observe that, except when otherwise specified, these remarks throughout this account apply to the period from the middle of August to the end of October 1849.

H.M. Dockyard.—There are ten or twelve dwelling-houses in the yard, and most of them form a terrace which is of the same height above the Medway as the military road. About sixty or eighty persons reside within the yard. The artificers and labourers, who are always varying in number, reside in the town. One cholera death occurred in the yard.

On Thursday, August 29, in the afternoon, Mr V., aged 52, one of the officers of the yard, was looking on at the cleaning of a very offensive drain near *the Brook*, and close to some houses of which he was the owner. During the evening he felt quite well, as usual, and had a party at his house. Next morning, at four o'clock, he was seized with cholera, and died at 2 P.M., after ten hours' illness. Perhaps if he had not exposed himself near the drain, he would not have been taken ill. But an evening party, a supper with some unusual dishes, and an attack of cholera a few hours after, have been known to be connected with each other. The water used in the dockyard is derived from Melville Hospital reservoir.

Melville Hospital is also called the *Royal Marine Infirmary.* It is the hospital of the Chatham Division of Royal Marines, and it also serves as a naval hospital for Chatham and Sheerness. Before its erection I understand that a building at the upper and west end of the marine barracks (now used as officers' quarters) was the marines' hospital; and naval patients were accommodated in a hospital-ship lying here. The building was named after Viscount Melville, a great (and much required) benefactor of the naval medical department. It was built in 1824, of brick, painted stone colour, at a cost of L.107,000. The apartments for sick officers, and the wards for men, are everything that can be desired in an hospital; the general plan of the building, and all its details, are excellent, and after having been over a great number of hospitals in Europe, British America, aud the United States, I have not seen one I prefer to Melville Hospital. It was under the excellent superintendence of Deputy-Inspector Drummond, the other officers being Surgeon Leonard and Assistant-Surgeons Pearce, Ward, Rimell, Jack, and Emslie. In front of the building is a spacious lawn; behind it is some ornamental ground, behind which is a terrace, on which are the houses of the medical officers; behind them is some garden ground, shut in by a wall from the military road, on the other side of which is the Reservoir. All this ground is on a slope; the upper part being about 90 or 100 feet above the level of the Medway.

Melville Hospital Reservoir is in Brompton, between the military road and Prospect Row, from which there is an extensive view over towards Rochester and Strood. The reservoir occupies an area about sixty paces square; the bottom and sloping sides are paved with square stones (street fashion); it is surrounded by an iron railing, (the key of the enclosure being in the care of the deputy-inspector of Melville Hospital). A deep well in the dockyard has a pump worked by a steam engine, which throws the water up into the reservoir; the engine is at work every day except Sunday, or, as we say in Scotland, every lawful day. From the reservoir, water descends to supply Melville Hospital, the Garrison Hospital, the Dockyard Houses, Chatham Line Barracks and the Marine Barracks. In May or June, weeds are apt to appear in it, and the reservoir is then annually emptied and cleansed.

Sources of Water Supply.—I am careful to indicate the sources of water supply of the various public establishments, and of the inhabitants generally, with reference to any theory of the degree of cholera prevalence being connected with the quality of the drinking water in use. In these towns there are no public waterworks; there are along the streets, at convenient distances, pumps in use for supplying all the houses nearest to them. For the sake of those not acquainted with Chatham, it may be as well to mention, that, from the influx of salt water brought by the tide, the water of the river Medway is not potable at this place. Mr Ranger* proposes to bring water to supply Chatham and Rochester from Boxley Abbey Spring, five miles distant. The Line barracks and the Marine barracks use the same kind of water, and they suffered very unequally from cholera; there were more cases in proportion in the Marine barracks, probably from their being situated at a lower elevation than the other. As far as the facts observed in these two barracks go, there is no reason to attribute to the quality of the water any influence on the epidemic.

Brompton.—The town of Brompton is pleasantly situated. It is elevated and well aired, being much more healthy than Chatham, and somewhat more so than Rochester, and for invalids with various chronic diseases, and for sickly children, a removal from either of these places to Brompton, though only the distance of one or two miles, will often be followed by evident advantage, from the beneficial change of air. The High Street and the principal other streets are kept in a tolerably clean state, although some of the arrangements for drainage are a little defective. Some of the streets are on a pretty steep incline, so that rain and other water runs off easily. Some courts and alleys were in a bad state; to improve which, a few efforts were made by the inhabitants, to which they were perhaps stimulated a little by the commandant of Brompton barracks threatening to confine the soldiers to barracks, if the town was not kept in a more cleanly state. During the epidemic, the soldiers were not allowed to enter Chatham; but Brompton was open as usual; while the arrangement was a loss to shopkeepers in Chatham, their loss was an additional advantage to those in Brompton.

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* In a pamphlet entitled *Report to the General Board of Health on the Town of Chatham, by Mr Ranger, C.E., 11th June* 1849. Pp. 18.

Chatham.—This town is the lowest situated of this cluster of towns; some parts of the High Street, and some lanes and courts off it, are only a few feet above the high water level. What is called *The Brook* represents what originally was probably a beautiful and romantic rivulet or burn, but is now a ditch filled to overflowing by contributions from all the drains near it. It is an uncovered drain, about four or five feet wide, and from three to five feet deep; its contents are half-solid; bubbles of gas are constantly rising to the surface, and the odour of it is, to strangers, most intolerable; and along its banks are erected a number of overhanging necessaries. This "Brook" stagnates in a winding ditch in the bottom of the valley, and for the distance of half a mile it has houses close to it. The tide rises in it; and about 150 yards from where it joins the Medway, the rise is about a foot. This so-called *Brook* ought to be arched over throughout its whole length; it is at one or two points covered in for a few yards; but this partial covering, though beneficial to those living nearest to these spots, makes the exhalations more intense at other parts. Some married men of the marines live on the Brook; such ought to be recommended to live in Brompton. In houses here, Mr Jack has seen a good many severe cases of low fever, and diarrhœa often prevails. I spoke to some of the residents on the Brook about the propriety of having it covered over: they said they did not feel any inconvenience from the odour, and that its being open was more convenient for throwing water &c. into it! Such is the effect of habit, and, it must be added, such is the stupidity of some people!

Some of the courts near Holborn Lane and the High Street are built with a marvellous attention to intricacy, small courts being, as it were, within others, and the greatest difficulties being opposed by man to any ventilation by nature. These lanes are between the High Street and the Medway; and of some of the houses the ground-floor is barely above the level of high-water.

Some married men of the marines live in these courts, and, for a single small room in this low, damp, and unhealthy situation, pay the rent of two shillings and sixpence a-week, or six pounds four shillings a-year. In these lanes, the children have a very sickly appearance; bowel complaints are prevalent all the year round, and there are occasional outbreaks of low fever. In Mr Ranger's pamphlet, Dr Ely, one of the oldest practitioners in Chatham, gives this account of these lanes. Mr Jack has found the account to be so confirmed for the last two or three years since coming to Chatham, and my own observation and practice there are to the same effect.

Passing along the High Street of Chatham, we next see on the right hand some ground set apart for market gardens, lying between the street and the Medway; beyond this we enter the city of Rochester, and are immediately struck with the much more cleanly state of the street than is exhibited in Chatham. The houses, also, have a better appearance; and the proportion of inhabitants in comfortable circumstances, and with habits of attention to cleanliness, is evidently much greater than it is in the former town. The ground now rises a little, and does so all the way gradually, on to the end of Rochester, near the bridge over the Medway. Gillingham is a village closely adjoining Brompton. New Brompton is a suburb of Brompton. Luton is a village near Chatham.

Of the Epidemic Cholera in Chatham in 1832.—When cholera was last epidemic in Great Britain, it prevailed in Chatham in 1832; but I was unable to discover accurately the number of cases and deaths from it, as registration was then imperfect. I intended learning the number of deaths in 1831 when there was no cholera, and comparing this with the number in the cholera year of 1832; in this way we might approximately learn the number of deaths from the epidemic, on the supposition that cholera deaths are a clear addition to the usual mortality. (This was found to be the case in Exeter in 1832.*) The Melville Hospital records for 1832 were not at hand; but Mr Drake informed me that four cholera deaths occurred in the hospital. Several persons of whom I inquired said there were only *a few cases*. A friend of mine, a non-practising surgeon, and who from his profession might naturally be supposed to take a moderate interest in the subject, said to me, at the close of the epidemic in 1849, that he believed there had been only a few cases;—his idea was, that there had been about fifteen or twenty deaths,—when in reality there had been 167. This shows that it is impossible to reach any accuracy by trusting to the unstatistical word *few*. It is not unlikely that the epidemic prevailed in Chatham to about the same

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* History of the Cholera in Exeter in 1832. By Dr Shapter. London, 1849.

in 1832 that it did in 1849. There were no daily or weekly
ts of the numbers of cases or deaths made public; and of the
registrars even, each knew the particulars only within his
strict. This circumstace is worthy of note with regard to
eory of predisposition to any attacks being given by alarm
published accounts of their number. If this be an occa-
element in the causation of the disease, it did not exist in
am. This makes simpler the inquiry into the respective
of the *epidemic influence* and infection.

a Non-Epidemic Outbreak of Algid Cholera near Chatham,
8.—In 1849, the first death from cholera in Chatham oc-
on the 28th of July,—(there was one in Strood on the
f June); but in the previous year, in the Hamlet of Grange,
from Gillingham Church, and in the same parish, there
leven cases of cholera, of which nine were fatal between the
d the 11th of December 1848. They all occurred in three
s, occupying two houses on Copperas Creek, which at high
carries the tide close to their doors. There had been no
a there before since about 1832. The cases were attended
friend Mr Weeks, and were also seen by Mr Jack. I
ed particularly whether great coldness was one of the symp-
and was informed that it was. Some may consider that
inute or miniature epidemic ought rather to be considered
roup of cases of sporadic or British cholera; but the great
ss and the great fatality are against this view. We might
suspected their nature to be sporadic if they had occurred
family, as here we might have supposed some cause in their
but when so many as three families were attacked, a dietary
is less likely to have been the real occasion of the seizures.
instance, perhaps, resembles those cases in which cholera
nly attacks a solitary ship on the ocean, and after raging
tly for a short time, suddenly leaves it, as in the two instances
oned in the beginning of this communication.

suming that the Grange cases were not spasmodic or British
ra, the non-prevalence of the disease at that time in the
bourhood shows that the term *epidemic cholera* is not always
tly descriptive of the malady. *Algid cholera* is perhaps the
unexceptionable term, but has rather an affected sound.
ic is an awkward term for any disease out of Asia. Appa-
, *sporadic* or *British cholera* are most convenient names for
ne complaint, and *epidemic cholera* or *the cholera* for the

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to great coldness being a diagnostic symptom between spo-
and epidemic cholera, although in the former there is occa-
lly some unnatural coldness, it is so much later in appearing,
ich less general over the body, and so much less in degree,

as to be perfectly distinguishable from the same symptom in epidemic cholera, (not to refer here to other inter-diagnostic symptoms.)

Of the Precautionary Measures adopted in 1849.—A few sentries were placed, to prevent the marines and soldiers from entering Chatham Proper, the troops being restricted to Brompton. Married men of the marines, who happened to reside in Chatham, continued to reside there as usual. This arrangement continued till the middle of September. In Chatham Line-barracks, the beer, ale, porter, and spirits coming into the canteen were inspected by a medical officer and a quartermaster; the soldiers were medically inspected daily at 6 A. M., and the women and children at 2 P. M. Some married soldiers belonging to the Line-barracks, who had formerly been allowed to reside out of barracks, were now required, with their wives, to reside in barracks. Where these men had been residing in Chatham, the change was for the better; but I imagine that most of them were residing in Brompton, and here the change was for the worse, being to a lower elevation. In Brompton barracks there was a daily medical inspection of the men; I believe the beer and other articles received into the canteen were not looked at. At the Marine barracks there was a daily medical inspection of the men at 6 A. M.; the sergeants were instructed to advise the men to apply immediately when any bowel complaint appeared; they were also to remind the men about wearing their flannel belts, of which each man had two or three. Articles received at the canteen were not examined.

With respect to the utility of these measures, some men confined to barracks are restricted to the canteen, when wishing to obtain spirits or other drinks; but most men are as likely to visit other taverns in the town, so that examining the quality of the drinkables at the canteen has not much effect in securing unadulterated specimens of these liquids for the soldiers' use. This examination, however, has a little effect, and a little alarm in the canteen-keeper will have some wholesome effect in preventing him from imposing on the soldiers. During a cholera-epidemic, very sour beer may create a diarrhœa, which may become of more consequence than at ordinary times. At these canteens they are not unlikely to have for sale, cabbages and similar vegetables in a stale condition. As for the hour of the medical inspection, six in the morning was too early, and any hour after eight would have been better, as some of the mornings were cold and damp; and unnecessary exposure to such, two hours before breakfast, is not advisable during a cholera-epidemic.

It is a curious fact, that in the Chatham line-barracks, during the epidemic, there were fewer cases of sickness than before or after; the reason of this probably being, that the soldiers were unable to visit scenes of drinking and other dissipation in the low lanes of Chatham.

The use of white duck trowsers is now discontinued in the line, but in the Marines, Artillery, and Sappers, they are still in use. During a cholera-epidemic in autumn, it will be not unworthy of consideration, that a return to the use of the warmer cloth trowsers before the usual time will sometimes be advisable, as the temperature of the season may not exactly correspond with the dress regulations.

At this time there were fewer naval ships in commission than usual, and in consequence there were more marines on shore than is customary. This led to the barracks being much crowded, and an idea was entertained of placing about four hundred marines on board one of H. M. ships in ordinary here, merely to give them barrack-accommodation. This idea, however, was not acted on. The *Black Prince*, of 74 guns, and 1751 tons, was thought of for this purpose; this ship lay about a mile from the New Stairs, and at low water on one side there was a wide expanse of wet ground uncovered by the retiring tide. H. M. ship *President*, of 50 guns, and 1537 tons, in ordinary, near the New Stairs, and close to the barracks and to Melville Hospital, would, on several accounts, have answered much better. But except where it is unavoidable, it is not advisable, during a cholera-epidemic, to remove men from buildings on shore to the lower situated and damper situation of ship-board, as there is much more risk from the epidemic in the latter situation than on land.

Connected with this subject is the choice of a situation for persons detained in quarantine; and in doing so it would be well to avoid a cold, damp, marshy, cheerless, catarrhal, rheumatic, and agueish situation like Standgate Creek, and to have one less rich in disqualifications. A cheerful situation on land, with green fields around it, would answer as well for detaining persons kept under observation, and would tend much more to the recovery of any sick persons. In Dr Bryson's work on the Epidemic Fevers of Sierra Leone are some excellent remarks on the choice of situations for quarantine establishments.

In Brompton, Chatham, and Rochester, there was a little done by the inhabitants in the way of cleaning the streets and lanes, and whitewashing courts, &c. In Chatham, where this was most wanted, there was least done. Towards the close of the epidemic, some advertisements appeared respecting a (so-called) Board of Health; this was composed of about a dozen non-medical persons, whose proceedings and exertions were known only to themselves.

Number of Cases of the Epidemic.—It was impossible to ascertain the number of *cases* of cholera and of epidemic diarrhœa that occurred in these towns, as private particulars did not make any returns to any board of health, It would indeed have been too much to expect a private practitioner to take the unpaid-for trouble of making any returns to a non-medical board. If all the civilian practitioners had been constituted a board, and one of their number to act as secretary who should be paid for his trouble, then we might have expected a numerical list to be kept of the daily number of new cases of cholera and of diarrhœa. The cholera deaths in Strood, Rochester, and Chatham, numbered 167; if we suppose that there was one death in every three cases, this would make 501 cases of cholera, exclusive of diarrhœa. If we imagine one death in five cases, then there would have been 835 cases of cholera, not including diarrhœa. We may expect that cholera mortality among marines, troops, and seamen on board of H. M. ships, will be much less than in the general population of a town, and for these reasons, that over the poorer inhabitants there is a less careful sanitary supervision, and against them there is their poverty, the bad situation and condition of their dwellings, their very dissipated habits, a less unremitting attention after being taken ill, and in cholera hospitals a description of nurses less to be depended on. In any town, when a cholera hospital is opened, it is generally difficult to procure good nurses; generally speaking, fear of infection and too low wages keep trustworthy women from applying for the situation; and none are to be procured except women little to be depended on, and some of whom drink the brandy and similar liquids ordered for the patients, and are, especially at night, likely to be for some hours too intoxicated to attend to the sick. These scenes must have been witnessed by all who have attended cholera civil hospitals, where whisky and brandy were among the remedies in use. There is no disease where it is of greater consequence to have careful and attentive nurses than in cholera; the short time this disease requires to run its course makes it necessary to make good use of every minute of it. In Melville Hospital (and also in Woolwich Marine Infirmary) they have male nurses, and not female ones as in Haslar[*]

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[*] With respect to the cholera in Haslar or Portsmouth Naval Hospital, I beg to quote from Dr Wilson's interesting account. He arranges the cases under four heads :—

A. Cholera abiliosa; of 49 cases, 26 were cured, 15 died, and 8 remained.
B. Cholera biliosa; of 25 cases, 19 were cured, and 6 remained.
C. Febrile diarrhœa; of 53 cases, 44 were cured, and 9 remained.
D. Convulsive colic; of 11 cases, 10 were cured, and 1 remained.

The patients and officials numbered 600, and no case originated in the hospital. The treatment was two-grain doses of calomel, and turpentine as an astringent, and to aid the effect of the calomel. Dr Wilson is a non-infectionist, but he says that it would be unsafe to assert that cholera can never, under any circumstances, become contagious (p. 22).—*Treatment of Cholera in the Royal Hospital, Haslar, in* 1849. Simpkin and Marshall, London, September 1849.

and Plymouth Naval Hospitals. The men make much better nurses than women, contrary to what might be at first supposed. The nurses are selected from among the privates of the Royal Marines; they are attentive to all orders, and can be easily and at once changed and sent back to their usual duty, if they are not sober, attentive, and found to answer fully to what is required of them.

Strood District Cholera Mortality.—Mr Gates, parish-clerk, is registrar for the Strood District, which is in the North Aylesford Union, and contains the parish and town of Strood, and the parishes of Frindsbury, Cliffe, Higham, Caxton, and Halling. A bridge across the Medway connects Strood with Rochester; Frindsbury closely adjoins; Higham, Caxton, and Halling, are rural parishes two or three miles distant. The first registered death occurred on the 20th of June, and the last on the 14th of September. After the first death, there was no death for four weeks; but it is most likely that a few cases were going on during the time. If we reckon continuously from the first death, the epidemic lasted thirteen weeks; if we exclude the first death and the next four blank weeks, then the duration of the epidemic was eight weeks. I think the former view is the more correct one. The weekly progress of the epidemic is best shown in a tabular view:—

Table I.

In the	First Week,	ending on	Saturday,	June 23,	1	death
In the	Second	„	„	June 30,	0	„
	Third	„	„	July 7,	0	„
	Fourth	„	„	July 14,	0	„
	Fifth	„	„	July 21,	0	„
	Sixth	„	„	July 28,	7	„
	Seventh	„	„	Aug. 4,	6	„
	Eighth	„	„	Aug. 11,	1	„
	Ninth	„	„	Aug. 18,	2	„
	Tenth	„	„	Aug. 25,	3	„
	Eleventh	„	„	Sep. 1,	4	„
	Twelfth	„	„	Sep. 8,	10	„
In the	Thirteenth Week,	ending on	Saturday,	September 15,	7	„

Total, 41 deaths

Of the 41 deaths, there were 26 in Strood parish, 12 in Cliffe parish, 3 in Frindsbury parish, and none in the other three parishes: 22 were males, and 19 were females.

Of Strood parish the census in 1831 was 2722; in 1841, the last census, it was 2881, showing an increase of 159, or 16 for each of the ten years. From 1841 to 1849, there are 8 years, and multiplying 16 by 8, we have 128 to add to 2881, making 3009 as the estimated population in 1849. Twenty-six deaths in 3009 inhabitants is one death in 115 of the population.

Of Cliffe parish the population in 1831 was 832; and in 1841 it was 842. In 1849 it may be said to be 850, and 12 deaths in 850 inhabitants is one death in 71 of the population. The population of Frindsbury is not given in a separate and distinct way in any publication I have been able to discover. The duration of the cases, their ages, and some particulars bearing on the subject of infection, will be mentioned afterwards.

Rochester-District Cholera Mortality.

Mr Furrell, auctioneer and appraiser, is the registrar of this district, which includes the city of Rochester and the west part of the town of Chatham, that part lying south and west of the Chatham and Maidstone roads and the military road. The first death occurred on the 30th of July and the last on the 3d of October, the duration of the epidemic being ten weeks. On the 30th of July, two deaths took place in Fort Pitt (which is in the district); they were women removed sick from Chatham; the first death in the town of Rochester was on the 9th of August, this was the eighth death in the district. The weekly progress of the epidemic was as follows :—

Table II.

First Week,	ending on	Saturday,	4th August,	5	deaths.
Second	,,	,,	11th August,	4	,,
Third	,,	,,	18th August,	7	,,
Fourth	,,	,,	25th August,	13	,,
Fifth	,,	,,	1st Sep.,	5	,,
Sixth	,,	,,	8th Sep.,	7	,,
Seventh	,,	,,	15th Sep.,	4	,,
Eighth	,,	,,	22d Sep.,	1	,,
Ninth	,,	,,	29th Sep.,	1	,,
Tenth Week,	ending on	Saturday,	6th Oct.	2	,,

Total, 49 deaths.

The weekly mortality of this district is more regular and uniform in its rise, progress, and decline than that of Strood. Except the five deaths in Fort Pitt, all the others were those of habitual residents. Of the 49 district deaths, 29 were in the town of Rochester and 20 in that part of Chatham included in the Rochester registration district. Of Rochester city, the census in 1831 was 9891; and in 1841, it was 11,026, showing an increase in ten years of 1135, or an average annual increase of 113½. From 1841 to 1849 are eight years, and multiplying 113½ by 8, we have 908 as the increase up to 1849; adding 908 to 11,026, we have 11,934, as the population of Rochester in 1849; and 29 deaths to 11,934 inhabitants is one death in 411½ of the population, or, excluding four cases carried sick to Fort Pitt from Chatham, one death in 477 inhabitants.

Of that part of Chatham included in the Rochester-district, the population in 1831 appears not to have been ascertained; in 1841, it was 5298. Supposing that the population has increased in the same ratio as that of Rochester, the population of this part of Chatham in 1849 may be said to be 5724; and 20 deaths to this number of inhabitants is one death in 286 of the population. Forty-nine district deaths in the district population of 17,658 is one death in 360 inhabitants. Of the 49 deaths, 27 were males and 22 females. That there were more deaths in proportion in the Chatham part of Rochester district, is probably explained by the circumstance that Chatham is situated in a lower elevation, is kept in a less cleanly state, and has more inhabitants of unsettled and unsteady habits and in poor circumstances than Rochester. In this district I could not discover any facts bearing on the subject of infection. The duration of the fatal cases and their ages will be mentioned afterwards. The 29 Rochester deaths include 5 at Fort Pitt, of which four (two women from Church Lane, and two soldiers from St Mary's Barracks) originated in Chatham; so that 25 is the number of deaths strictly belonging to Rochester proper, and 25 deaths in 11,934 inhabitants is 1 in 477 inhabitants.

Gillingham District Cholera Mortality.

Mr Tracey, bookseller, is the registrar of this district, which includes Gillingham village and parish, the hamlet of Grange, the suburb of New Brompton, the town of Brompton, the village of Luton, and the east part of the town of Chatham. It includes St Mary's Barracks, Brompton Barracks, Melville Hospital, the Marine Barracks, Her Majesty's Dockyard, the Line Barracks, the Spur Hospital, the Garrison Hospital, and Chatham Workhouse. The three registrars, Messrs Tracey, Furrell, and Gates, favoured me with all the information I requested, and I take this opportunity of thanking them for the obliging disposition they evinced. The first cholera death occurred on the 28th of July, and the last on the 28th of September,—the duration of the epidemic being nine weeks. There were 77 deaths,—47 in males, and 36 in females. The weekly rise, progress, and decline of the epidemic was as follows:—

Table III.

In the first week, ending on Saturday,	4th August,	2 deaths.
Second, „ „	11th August,	2
Carry forward,	.	4

Brought forward,	.	4 deaths.
In the third week, ending on Saturday,	18th August,	17 "
Fourth, " "	25th August,	11 "
Fifth, " "	1st Sep.,	14 "
Sixth, " "	8th Sep.,	13 "
Seventh, " "	15th Sep.,	11 "
Eighth, " "	22d Sep.,	3 "
In the ninth week, ending on Saturday,	29th Sep.,	3 "
Total,	. .	77 deaths.

The epidemic was tolerably regular in its decline. The following are the chief localities of the cholera deaths:—

Table IV.

	No. of Deaths.			No. of Deaths.
Jeffrey's Place, Chatham,	10		Church or Cat Lane, Chatham,	2
Caroline Square, do.	5		Chatham Hill,	2
Medway Union Workhouse, do.	5		New Brompton,	3
Whitaker Square, do.	2		Garden Street, Brompton,	1
Richard Street, do.	1		Grange Hamlet,	2
Best Street, do.	1		Gad's Hill, Gillingham,	10
High Street, do.	2		The Street, do.	4
H. M. Dockyard, do.	1	Gillingham Parish.	St Mary's Barracks,	1
Mill's Terrace, do.	2		Park Place,	1
Full-a-Love's Alley, do.	1		Brittan's Farm,	1
Langley's Lane, do.	1		Cage Lane,	1
Cross Street, do.	3		Hard's Town,	1
Beacon Hill, do.	1		Exmouth Terrace,	1
Garrison Hospital, do.	2			

Besides the above, there were six fatal cases in Melville Hospital, of which five were admitted from the Marine Barracks, the sixth was that of an hospital servant. In the Marine Barracks a child (Day) died of cholera.

The following table shows the cholera mortality according to ages, and in the three districts:—

Table V.

Aged	Deaths in the District of			Totals.
	Strood.	Rochester.	Gillingham.	
Under 15 years,	11	11	27	49
15 to 30 years,	11	8	16	35
30 to 45 years,	5	6	11	22
45 to 60 years,	8	11	12	31
Above 60 years,	6	13	11	30
Totals,	41	49	77	167

I intended to have added here a table showing, in any thousand of the population, what proportion of persons there are of each of the above five groups of ages, in order to illustrate the connection between cholera fatality and age.

It was impossible to procure the population of Brompton and Gillingham, and the Gillingham part of Chatham separately; in 1831 it would appear that no separate census was taken, and in 1841 it is not distinctly stated. If we had the numbers of the population, it is likely we should find that in Brompton there were fewer proportionate deaths than in the town of Rochester. The Gillingham part of Chatham would probably show about the same proportionate mortality as that part of it within Rochester district.

General View of the Epidemic in the three Districts.

We may now take a general view of the epidemic in the three registration districts. Not reckoning a solitary death in Strood in the week ending 23d June, and passing over four blank weeks, the duration of the epidemic might be said to be eleven weeks, from the 22d of July to the 6th of October. But during the four weeks when there were no deaths, it is most likely that cases of the epidemic were going on; and it is probably more correct to say that its duration was sixteen weeks, the first death having taken place on the 20th of June, and the last on the 3d of October.

Table VI.

Week	Ending on Saturday	Number of Cholera Deaths in the Districts of			Total.
		Strood.	Rochester.	Gillingham.	
1st	23d June,	1	0	0	1
2d	30th June,	0	0	0	0
3d	7th July,	0	0	0	0
4th	14th July,	0	0	0	0
5th	21st July,	0	0	0	0
6th	28th July,	7	0	0	7
7th	4th August,	6	5	2	13
8th	11th August,	1	4	2	7
9th	18th August,	2	7	17	26
10th	25th August,	3	13	11	27
11th	1st Septem.,	4	5	14	23
12th	8th Septem.,	10	7	13	30
13th	15th Septem.,	7	4	11	22
14th	22d Septem.,	0	1	3	4
15th	29th Septem.,	0	2	3	4
16th	6th October,	0	2	0	2
	Totals,	41	49	77	167

Of the 167 deaths, 96 were in males, and 71 in females. From looking over the entries in the register, I consider that about twenty deaths otherwise registered ought to have been entered as from cholera; these deaths were registered under colic, diarrhœa, and several other names; but, from the short duration of the illness, the age, the fact that subsequent deaths in the same house or family were registered as from cholera, these cases must have been cases of the epidemic. Accurate registration will never be secured till the whole department, from its head down to each district registrarship, is filled by medical men. I have heard the combined population of Chatham, Rochester, and Strood assumed to be 50,000; and 167 deaths to 50,000 inhabitants is in the proportion of one death in 299 inhabitants.

Duration of the Cases.

With regard to the duration of the cases, I drew up a form for each district, to be filled up with certain particulars of each case; there were four columns for the duration of (1) the premonitory diarhœa, (2) cholera, (3) consecutive fever, and (4) total duration. Often, from the register, it was not possible to fill up any column but the one headed Cholera; but sometimes the other columns could also be filled up. The whole time is reckoned in the following table, which I beg may be understood as giving the information only to be derived from the registers.

The following table shows the duration of the cases in the three districts; it exhibits the proportion of cases where only a few hours are left for the employment of remedies.

Table VII.

	Number of Cases.—District of			
Duration of the Cases.	Strood.	Rochester.	Gillingham.	Total.
Duration not ascertained	3	1	2	6
Of 4 hours' duration	0	1	0	1
Of 5 hours	0	0	1	1
Of 6 hours	0	0	1	1
Of 7 hours	1	0	1	2
Of 8 hours	1	2	3	6
Of 8 hours and under	2	3	6	11
Of 9 hours	1	0	3	4
Of 10 hours	0	0	1	1
Of 11 hours	0	0	2	2
Of 12 hours and under	7	7	18	32
Of 24 hours and under	21	26	46	93
Of 48 hours and under	25	34	58	117
All above 48 hours	10	12	15	37
Of 3 days	2	3	1	6

Duration of the Cases.	Number of Cases.—District of			
	Strood.	Rochester.	Gillingham.	Total.
Of 4 days	0	0	1	1
Of 5 days	2	2	1	5
Of 6 days	2	0	0	2
Of 7 days	1	0	2	3
Of 9 days	0	0	1	1
Of 11 days	0	1	0	1
Of 13 days	0	0	1	1
Of 15 days' duration	0	0	1	1
	41	49	77	167

The following table is an abstract of the preceding one, and it shows that the average duration of the fatal cases was fifty hours and a-quarter.

Table VIII.

District of	No. of cases of which the duration was ascertained.	Total duration in hours of these cases.	Average duration of each case. Hrs.	Mins.
Strood,	35	1705	44	52
Rochester,	48	2052	42	45
Gillingham,	75	4363	60	50
Total,	161	8120	50	23

State of the Weather during the Epidemic.

We have all kinds of weather both during a cholera epidemic, and also when there is no cholera present. I noted the character of the weather during the epidemic, but there was no striking connection between its description and any rise or decline in the number of cases. In September there were 19 days wholly fair, and 11 partly rainy. In October, 18 fair days, and 13 partly rainy. During a cholera epidemic, what is most to be desired is the prevalence of high winds. The absence of rain is also an advantage.

Of the State of Health of the Chatham Division of Royal Marines.

In taking the liberty of making a few remarks on this subject, I hope I shall not be considered as trespassing within the province of others better able to do it justice; and I must not omit in this place to return my thanks to Deputy-Inspector Drummond, Royal Marines, principal Naval Medical Officer at Chatham, for his kindness, and the facilities he afforded me for acquiring much of the information contained in the present account.

Number of Sick in Melville Hospital in 1848 *and in* 1849.

By taking the sum of the daily sick-rations for a month, and dividing by the number of days, we find the average daily number of sick.

The following table shows, for each month of both years, the average daily number of sick officers, marines, and seamen, and omits officers of the hospital, nurses, and servants. Fractions are omitted.

Table IX.

Month.	Average daily number of Sick. Year 1848.	Year 1849.	Average daily increase in year 1849.
January,	140	145	5
February,	154	157	3
March,	145	148	3
April,	148	158	10
May,	135	138	3
June,	117	162	45
July,	130	176	46
August,	130	201	71
September,	133	170	37
October,	127	153	26
November,	128	135	7
December,	127	137	10
For the Year,	134	156	22

From the time that Melville Hospital, in 1824, was opened, up to the end of 1849, the date when it contained the greatest number of sick was the 23d of August 1849, when they numbered 234. There were more marines at Chatham in 1849 than in 1848; and for the first quarter of 1849, the increase of sick corresponds to the increased number of men; the additional increase afterwards in the number of sick over that in 1848, shows what is due to the presence of cholera and epidemic diarrhœa.

To show the weekly progress of the epidemic, I give the following table.

Table X.

Weekly Number of Cases of Diarrhœa and of Cholera admitted into Melville Hospital.

In the 1st Week, ending on	No. of Cases of Diarrhœa.	Cholera.	Total No. of Cases of the Epidemic.
Saturday, 14th July,	1	0	1
2d „ 21st July,	3	0	3
3d „ 28th July,	4	0	4
4th „ 4th August,	4	0	4
5th „ 11th August,	15	1	16
Carry forward,	27	1	28

In the	No. of Cases of Diarrhœa.	No. of Cases of Cholera.	Total No. of Cases of the Epidemic.
Brought forward,	27	1	28
6th Week, 18th August,	31	13	44
7th „ 25th August,	36	9	45
8th „ 1st Sept.,	10	2	12
9th „ 8th Sept.,	9	1	10
10th „ 15th Sept.,	6	4	10
11th „ 22d Sept.,	4	0	4
12th Week, ending on Saturday, 29th Sept.,	6	1	7
Totals,	129	31	160

During the week preceding the above account, and the week following it, there was no case of the epidemic admitted. Of the above 31 cases of cholera, 28 were in marines, two were in seamen, and one was in a hospital servant. All the 129 cases of diarrhœa were in marines. According to the above table, in 160 cases of the epidemic, there were 31, say 30, cases of cholera, and 129, say 130, cases of choleraic or epidemic diarrhœa, severe enough to be taken into hospital, slighter cases being excluded. This is in the proportion of 80 per cent. of the epidemic being diarrhœa, and 20 per cent. being cholera; or, in every five cases, four of diarrhœa and one of cholera: this estimate including those cases only of diarrhœa which were severe enough to incapacitate the individuals from attending to their usual occupations.

It was, of course, only the more profuse cases of diarrhœa which were admitted into Melville Hospital; a number of other men were affected with bowel complaint, and were prescribed for in the morning; some were excused from duty for the day, remained in barracks, and next day, if they were worse, were taken into hospital; others were under out-door treatment for two or three days, and attended to their duty as usual. From the 15th to the 21st of August, the out-door diarrhœa cases averaged 24 a-day. From the 21st August to the end of the month, the daily average was about 12 or 13. I think I am correct in considering, that as many men were ill of diarrhœa without being taken into hospital, as there were admitted. According to this view, we have 30 cases of cholera, 130 cases of slight diarrhœa, and 130 cases of more profuse diarrhoea, in every 290 cases of the epidemic. This is in nearly the following proportions: in 100 cases of the epidemic, we may consider that there are 45 cases of slight diarrhœa, 45 cases of more profuse diarrhœa, and 10 cases of cholera.

Of Epidemic Diarrhœa and of Non-Epidemic Diarrhœa.—During the continuance of a cholera epidemic, it is usually considered that most of the cases of diarrhœa owe their existence to the presence of the "epidemic influence;" but it would appear that sufficient consideration is not given to the possibility, or rather probability, that *some* of the diarrhœa cases do not belong to the epidemic, but represent that diarrhœa which exists in ordinary years, when there is no cholera present, and which varies in its degree of prevalence according to the season. The peculiarities of naval and military medical practice afford facilities for comparing the extent of diarrhœa prevalence, according to the number of men, greater than can be conveniently found in private practice. At ordinary times, when cholera is absent, we still have diarrhœa prevailing to some extent; and by ascertaining the average degree of this, and deducting it from the total number of diarrhœa cases occurring during the epidemic, the remainder may be set down theoretically as arising from the choleraic constitution of the air, or, if some of my readers will permit me to add, from infection. It may be difficult, or in many cases impossible, for *any one* to say whether certain individual cases belong to the one kind of diarrhœa or to the other; but numerically and statistically, as regards the totals, the truth may be approached or reached. I am well aware that here some medical men will say, that, as the treatment must be, or may be, the same, it is of no practical moment to inquire, whether a case of diarrhœa be of an epidemic or of a non-epidemic nature, and that the inquiry is unnecessary. For the sake of others who think differently, I have made the following comparisons of the amount of diarrhœa prevalence during the non-cholera year of 1848, and during the cholera year of 1849, in the Chatham *Division* of Royal Marines, as shown by the admissions into their hospital.

Second Quarter, 1848.—From 1st April to 30th June. The average strength of the *division* was 894, being 38 officers, and 856 men. During the quarter, 623 were admitted to hospital; of these 523 were marines, and 87 were seamen. In April, of diarrhœa, one case; in May, one case, (also two cases in seamen, and one case of dysentery); in June, one case; being three cases in 894 men, or one case in 298 men; seamen are not included.

Third Quarter, 1848.—From 1st July to 30th September. The average strength of the division was 916. Admitted to hospital, 611, of whom 502 were marines, and 109 were seamen. In July, of diarrhœa, eight cases; in August, 17 cases, (also one in a seaman); in September, eight cases. Being 34 cases of diarrhœa in 916 men, or one case in 27 men, showing a much greater prevalence than during the previous quarter.

Second Quarter, 1849.—From 1st April to 30th June. The average strength of the division was 1316, being 70 officers, and 1246 men. During the quarter, admitted to hospital 799, of whom 704 were marines, and 95 were seamen. Admitted with diarrhœa, in April, nine cases; in May, four cases; in June, eight cases; all these cases were in marines. Being 21 cases in 1316 men, or one case in 62 men, (one in 62⅝). This is a much greater proportionate amount of diarrhœa than in 1848; the first cholera death in Chatham Proper was on the 28th of July. In future years, when during any month there is much more than the average number of diarrhœa cases according to the season, there may be reason to apprehend the approach of cholera.

Third Quarter, 1849.—From 1st July to 30th September. The average strength of the division was 1338, being 70 officers and 1268 men. During the quarter, admitted to hospital 973, of whom 868 were marines, and 105 were seamen. Of the cases, 397 were medical and 572 surgical. Admitted with diarrhœa 132 cases (also two cases in seamen); with cholera, 31 cases, of whom 28 were in marines, two in seamen, and one in an attendant.

In 1338 men, 132 cases of diarrhœa is in the proportion of one case in ten men (or one in 10·13).

In 1338 men, 28 cases of cholera is in the proportion of one case in 47 men (or one in 47·78). Five of the marine cholera cases died; in 1338 men, one death in 267 men. Of the epidemic, 160 cases in 1338 men is in the proportion of one case in eight men (or one in 8·36).

Six Months, 1848.—To 3·35 per thousand men, the proportion of diarrhœa cases to the strength, in the second quarter, we add 37·11 per thousand, the proportion for the third quarter, making 40·46 per thousand for the six months.

Six Months, 1849.—To 15·95 per thousand men the proportion of diarrhœa cases to the strength in the second quarter, we add 119·57 per thousand as the proportion of diarrhœa and cholera cases in the third quarter, making 135·52 per thousand for the six months. Deducting 40·46, the proportion for 1848, from 135·52, we have remaining 95·06 per thousand, representing what may theoretically be considered to belong to the epidemic. The 40·46 cases being supposed to represent the usual average number of diarrhœa cases to be met with at that season in ordinary years. Supplementary to this view, there is nothing inconsistent in supposing the instance of a diarrhœa case arising from an accidental or non-epidemic cause, and continuing for two or three days to preserve this character, and then having superadded to it a pathological character derived from the epidemic influence. [It is hardly necessary to observe that *pathological* is used here in its original and more correct sense, and that it does not refer to morbid anatomy.] In 1848 the extent of diarrhœa prevalence is represented by 40, and in 1849 the extent of the diarrhœa and cholera prevalence is represented by 135; of which 40 represents the usual diarrhœa, and 95 the cholera and the epidemic diarrhœa. The diarrhœa of 1849 was isotypic and heteropathic. [In Dr Hays' American Journal of the Medical Sciences for 1844, is an excellent paper by Dr Harden, in which he describes some diseases as being isotypic and heteropathic, and others as being heterotypic and isopathic.]

Form of a Register for Cholera Cases.

When noting down the cases of the epidemic occurring among the marines, I used a pocket blank book, ruled with twenty seven columns, for :—the number of the case, patient's name, rank, age, number of the barrack room from which he was admitted, name of barracks, whether the marine or Brompton, day and hour of admission, number of ward in hospital, whether already a patient in the hospital, coldness, lividity, nausea, vomiting, rice-water vomiting, purging, rice-water purging, chalky stools, griping, spasms, if urination natural, if consecutive fever (or secondary fever), whether cholera or diarrhœa, to be marked in the column by C or D; result and date, duration of attack, in four columns for, 1. premonitory diarrhœa; 2. cholera; 3. consecutive fever (or secondary fever); 4. total duration. In each column, under each heading, a single mark showed whether the patient had or had not such a symptom, and security was taken that no symptom could be omitted to be noted. These columns filled two opposite pages, and over the leaf, the patient's name written in the ruled line in its place, left space for some further particulars. In this way it was easy to find what proportion of cases were complete in all the symptoms, and what symptoms were less frequently met with. This plan does not interfere with keeping more detailed and full accounts of the more important cases and of all the cases of cholera. Noting the number of the barrack-room may lead to discovering that certain rooms or certain parts of a barrack furnish more cases than others.

Localities of the Cholera Cases in the Marine Barracks.

It has been already mentioned that the main body of the men's barrack is a building of four floors, of which the lowest is in front, a sunk floor, a passage of four feet wide going along in front of the windows, and separating these rooms from any dampness in the bank of earth; the wall keeping up this bank is as high as the top of the windows. In the building there is a double row of rooms, one with windows to the front, and the other with windows looking to the rear and the Medway. The front rooms in the sunk flat would not, I suppose, be occupied if the barracks were not crowded; they would probably not be thought good enough to be occupied at ordinary times. At this time they were all in use; there are eight of them, and their numbers are 1, 2, 17, 25, 26, 41, 49, and 50. As the building is of four flats, each having two rows of eight rooms, this front sunk flat is one eighth of the building, and it is a striking fact that it furnished no fewer than eight cholera cases out of the 26 marine cases *in barracks* (two of the 28 marine cases, Moss and Bennet, were not living in barracks). Room number 17 furnished, out of eight or nine inmates, Robinson, Burke, and Woodgate, fatal cases, and Harvey, who recovered. Room 25 furnished Alder, a fatal case, and Frost, who recovered. Room 50 furnished Serjeant Hopper and Henson. Room 49 furnished Hicks. On August 20th, after so many cases coming from No. 17, Mr Drummond caused it to be closed; its inmates were removed to No. 34, the former inmates of 34 being distributed among several other rooms. The solution of the chloride of zinc was also employed in the room, and along the passage, and in a drain which led off from one end of it; I may observe that this drain or sink was not at all in a bad state, the passage was whitewashed. In room 17, the cases commenced on the 13th, 15th, 17th, and 19th of August: this room did not differ in any respect from the others in the same row; the particulars respecting it will probably be considered by infectionists to favour their views.

On account of the ground sloping down towards the river, the back row of rooms on the lowest flat were on a level with the ground. Here, however, in the passages from the front to the back of the building, there was less ventilation than in the upper floors. This back half of the lowest floor furnished five cases:—Spencer, a fatal case, room 3; Twells, room 51; Macgravy, 27; Mulvey, 42; and Bovis, from No. 4 room; and likewise a sixth case, Mary Ann Day, infant daughter of Serjeant Day, died of cholera in room 4 on 31st August, after 24 hours' illness.

Besides these cases of cholera, there were in the lowest flat in front ten cases, and in the rear twelve cases, admitted to hospital with epidemic diarrhœa.

Thus we have thirteen cholera cases in the lowest floor, while in the other three floors together, and all occupied to the same extent, there were only thirteen cases. This clearly shows the preference that cholera has for the lowest situations, and those worst ventilated.

I shall now consider the exact number of men living in the Marine Barracks. The strength of the division was 1338, but from this number we may deduct about 338 to represent married officers living out of barracks, their servants, a number of married men, an average number usually in hospital, and the men living in Brompton Barracks. According to this view, there were, in 1000 men occupying the barracks, five cholera deaths.

Having compared the cholera prevalence in one part of the Marine Barracks with the other parts, we may next compare its prevalence in the Marine Barracks, and in the Line Barracks, situated higher up on the slope of the hill, where, in 2000 men, there were two cholera deaths. In the Marine Barracks there were proportionately five times more deaths than in the Line Barracks, and there does not appear to be any cause for the difference, except the low situation of the former. There are some particulars bearing on the subject of infection connected with the two deaths in the Line Barracks. Her Majesty's hired transport, *Marlborough*, sailed from Portsmouth with troops for the East Indies,—cholera appeared on board, and the vessel returned to Portsmouth,—some of the troops were landed, and remained there;—sixteen others were sent on to Chatham, where they were placed under observation, and among them occurred the two deaths in question in the Garrison Hospital. Did these men acquire the disease in the same way as others in Chatham? Or had they been infected in the *Marlborough?* Infectionists will consider that there is some probability in the latter view. I regret being unable to give the dates of the *Marlborough's* return, &c. The soldier of the 96th Regiment, aged 22, died, after fourteen hours' illness, on the 31st August; and the soldier of the 52d Regiment, aged 20, died on the 4th September, after five days' illness.

Second Attacks of Cholera.

Hardinge, from room 8, was seriously ill of severe cholera from the 17th to the 27th of August, and was ill of a second and milder attack from the 13th to the 25th September; he had for some days before the 13th been confined in No. 67, the *dry-room*, which is cold, sunless, and somewhat damp. In Gillingham district, on September 4, a male, aged 41, died after twenty hours' illness, of a second attack. These two instances are the only ones I was able to discover of a second attack of cholera. There were various instances of a second or third attack of the *epidemic*, *i. e.*, of rather profuse diarrhœa, these being for a week or so perfectly well, and then having either diarrhœa again or cholera. Also an instance of cholera, followed some weeks after by epidemic diarrhœa.

Is Cholera Infectious?

The division of the profession on this subject is well shown by the circumstance, that in two of the standard works on the practice of physic, different opinions are expressed;—Dr Craigie, in his Practice of Physic, being against, and Dr Copland, in his Dictionary of Medicine, being in favour of, the opinion that cholera is capable of being communicated by infection. In 1832, the views on this subject were very different from what they are at present. In the former epidemic, ships arriving from certain ports were medically visited, fears were entertained of the risk of making examinations of those who had died of cholera, and these were interred in ground detached from the usual burying-ground, from a fear of danger on the ground being afterwards opened. In 1849, there was no medical visitation and inspection of ships, no separate burying-grounds; and, instead of being afraid of making examinations of the dead bodies, in Professor Goodsir's rooms in the University of Edinburgh, during the first month of the winter session, 1848-9, there were dissected thirty-nine bodies, all, or nearly all, of whom died of cholera.

The words *infection* and *contagion* are sometimes used with different shades of meaning; one writer employs them as being synonymous; another attaches to infection a precise meaning, to distinguish from contagion, while a third reverses this distinction. I prefer the following view:—Some diseases, as typhus fever, are infectious, or are conveyed to the healthy by their inspiring the air (1.) expired by the sick, or coming from their bodies, this being personal infection; (2.) fomital infection, is where the infecting air comes from the body-clothes or bed-clothes of a typhus patient.

(FOMES, *Wood, Turf, or other Matters used to preserve the remains of a Fire, so as to rekindle it.*)

Other diseases, as scabies, are contagious, being acquired by contact with a person having the disease; this may be either (1.) personal contagion, as shown in touching the person of a patient with scabies; or (2.) fomital contagion, as shown in touching or wearing the body-clothes or bed-clothes of such a person.

It is at the beginning, and also at the close of an epidemic that, it is most easy to trace the signs (if any) of infection, as in the middle of an epidemic these are apt to be obscured by the great abundance of cases, and all the attacks are apt to be attributed to the epidemic influence.

Facts Bearing on the Disputed Question of Infection.

In Cliffe parish, in Strood district, there were twelve cholera deaths, of whom no fewer than eight were in several families of the name of Mayor; there was nothing peculiar in the dwellings of these persons, and it seems more likely that infection caused some or most of the eight attacks, than that, in a parish containing 860 inhabitants, eight fatal cases in twelve should have occurred accidentally and merely from the epidemic influence among persons related to each other. In many parts of Scotland, where a large majority of the residents have the same family name, it would not be surprising to find many of the name of Stewart, or Campbell, or M'Donald attacked, but in Cliffe, Mayor is not more common than any other name.

In Gillingham district, I have already alluded to the particulars respecting room 17 in the Marine Barracks, and to the two soldiers sent back from the *Marlborough*, and who were the only patients who died in the Line Barracks. In this district the first cholera case was that of Anthony Strenatt, aged 25, an itinerant musician, a foreigner (either an Italian or a German); he was from the direction of London, Greenwich, and Gravesend, and was intending to pass on to Maidstone; he was found ill of cholera on the roadside, not far from Chatham Workhouse (Medway Union Workhouse), on the 27th July, and died on the 28th, after twenty-four hours' illness. In the workhouse he was assiduously nursed by Charles Terry, aged 68, who was incessant in his attention, and was the only one so employed. Terry was seized with cholera, and died on the 31st July, after twenty-eight hours' illness, being the second death in the district. The next cholera death in the workhouse was on the 24th of August, the fourth was on the 25th of August, and the last death in the district took place in the workhouse on the 28th September.

With these particulars I was obliged, during several visits to workhouse, by the master, and by Mr Hoar, secretary to the Board of Guardians.

The attack of Strenatt favours the infectionists; if he was taken ill simply from the epidemic influence, why was it that he alone, out of 50,000 inhabitants, was seized? The attack occurring not in a resident, but in a traveller newly arrived from other parts, and parts where cholera existed, looks as if he had brought the infection with him. Anti-infectionists may say, that in the town he had last left, he had been exposed to the epidemic influence, and that it had not acted on him till he arrived at Chatham. It may be said that Strenatt was fatigued with travelling on foot; but there were hundreds in Chatham as much predisposed by fatigue as he was, to any disease. If it was not infection, but the epidemic cause which induced the attack of Terry, was it not singular that, of the large number of inmates in the workhouse, the disease should have singled out the man who happened to be the sole nurse of Strenatt? This circumstance certainly looks more like infection than anything else.

Instances where several attacks occurred in the same house and family do not tell altogether in support of the infectionists; it may be the case, as it may be supposed, that close to the dwelling there are some arrangements at variance with hygeine;* that some ditch, drain, or sink, attracts the atmospheric poison, or aids the epidemic influence; and that the five or six cases have all arisen from one common cause, and not from one case producing another by infection; but in many instances there is nothing peculiar in the dwellings, and perhaps half of the weight of these cases is on the side of infection. In Gad's Hill, Gillingham, on August 12th and 14th, a son and his father (Chancey) died in the same house. On August 27th, two brothers died in the same house, on Gad's Hill. On Gad's Hill, on September 2d and 3d, two daughters and their mother (Filley) died of cholera in the same house. Gad's Hill is about a quarter of a mile from Gillingham village; where the Filleys lived, there was a row of three houses, on a slope, with their back to the Medway, at the end of the row was an open ditch, not in a very clean state; in the first house (Filley) were six inmates, five cholera cases, three deaths; in the second or middle house lived Mrs Muncheon, who acted the part of a good neighbour to the Filleys, and attended to them in their illness; she took cholera and died; in the third house were three cases and one death; when visiting these patients in company with Mr Weeks, their medical attendant, I neglected to note the number of inmates in the third house. Around these houses the drainage is defective, and there are a good many trees, lessening the ventilation.

On September 11th and 12th, a daughter and her mother (Ward) died in the same house in Luton village; and on September 19th another daughter of Mrs W. died in Cross Street, Chatham.

On September 25th and 27th, died Elizabeth Webb and John W. her husband, in Cross Street, and near the house where Mrs Ward's second daughter had died; she had been to see her family at Luton; it is not unlikely that she was visited in her illness by the Webbs. These three deaths were the only ones in Cross Street.

In Melville Hospital the cholera patients occupied three wards, and the medical officers and nurses visiting these were fourteen in number; one of the medical officers had an attack of epidemic diarrhœa. Five or six men ill of surgical diseases had slight diarrhœa for a few days; in a few cases after diarrhœa for a few days, dysenteric or dysenteroid symptoms appeared for a day or two. An hospital servant, Martin, died of cholera. These were all the cases of the epidemic among the inmates of, or persons connected with, the hospital. If Martin's attack arose from infection, there is no occasion to consider that it was from exposure in the hospital, as his duties did not require him to enter the cholera wards, or indeed any of the wards.

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* On hygeine, as connected with cholera, there are many interesting observations in Dr Fred. Jas. Brown's Naval Hygeine. London, 1849.

Samuel Martin, aged 54, a highly respectable and worthy man, was related to the Filleys, already mentioned, and for some days and nights had been assiduous in his services to them whilst under the disease. Exhausted in body, and depressed in mind, he walked from Gad's Hill to the hospital at 11 P. M. on September 4th, and retired to his single-bedded room. On September 5th, about half-past 1 A. M., he was heard to moan in his room, and was immediately visited. He had been seized about half an hour after retiring to bed; the voice was feeble; the whole body cold and livid; pulse almost imperceptible; cramps in the abdomen and extremities; his bedding, and the floor of the room, were covered with the copious watery evacuations from the stomach and bowels. He was removed to another room, placed in a heated air-bed; had two grains of calomel every ten minutes, and received other appropriate treatment; but he died at half-past 5 A. M., after six hours' illness. Martin had been allowed to visit his sick relatives daily, but the evening before at the hospital he appeared in his usual health; it was afterwards found, that for two or three days he had been labouring under diarrhœa, for which he had treated himself with some anti-diarrhœa mixture, which he knew the patients were taking.

I have endeavoured to give an impartial account of all the facts I was able to discover in Chatham, bearing on the *vexed question* of the infectiousness or the non-infectiousness of cholera. This is a subject on which every reader of this Journal thinks for himself, and it is almost unnecessary for an individual to express his own opinion on it. Laying aside all the probabilities and improbabilities of any theories, and all arguments derived or supposed to be derived from analogy, I am inclined to think that there are *facts* sufficient to *prove* that cholera is to some extent communicable by infection. The difficulty lies in ascertaining the degree of this communicability. Cholera seems to prevail principally in an epidemic manner, and from the epidemic influence; and, secondly, to spread, but in a much smaller degree, by infection.

Some writers think it difficult to imagine a disease to be both epidemic and infectious; but this difficulty is one of their own making; all they have to do is to observe nature, and not to attempt to force nature to fit into what they conceive to be a probable theory.

If it be allowed, that cholera is to some unknown extent infectious, then it becomes the duty of those holding this opinion to employ some disinfecting agent which may destroy, or at least lessen, the risk of proximity to cholera patients. We may suppose that a person seeing much of cholera patients runs two risks of an attack; first, like any other resident in the same town, he runs the risk of an attack from the epidemic influence; and, secondly, in addition to this, he runs a risk from infection, and this second risk may perhaps be guarded against by the use of a disinfecting agent.

Theory of Disinfection.

Some of our best medical authorities* do not agree in the meaning they appear to attach to the word disinfect; some restricting it to an action on infectious miasm, and others apparently extending it to an action on offensive odours not in any way connected with infectious miasmata. By a disinfecting substance I understand one which either (1) destroys infection, or (2) greatly lessens its intensity.

According to Liebig,† ammonia is always generated in a sick-room, and particularly so where the disease is infectious; he also considers that it is ammonia which renders the infectious principle volatile, and consequently efficient.

In an essay‡ by me on Antiseption, Deodorization, and Disinfection, published in 1848, I took up the theory of Liebig where he left it, carried out his views further, and made use of them to form a theory of disinfection; being, as far as I know, the first person to explain the manner in which a disinfecting substance acts. We, of course, draw a broad line between *deodorization* and *disinfection*, words sometimes confounded or used indiscriminately. Odours are of two kinds,—natural odours, as of flowers, and odours from decomposition (which latter may be called disodours). It is only on these last that a deodorant agent, as for example the solution of chloride of zinc, acts; and it does so by acting on the ammonia which (according to Liebig) is the bearer of the disodour, or that which renders it volatile. (In other cases, where the odour is that of sulphuretted hydrogen, the chloride of zinc acts directly upon this.) It is impossible to avoid being convinced of its efficacy in destroying disodours, which it does without leaving behind any odour of its own, so that it differs from some other substances which, like chloride of lime, destroy the disodour, but leave strong traces of their own odour, or from those objectionable articles called *pastilles*, the burning of which merely overpowers the original smell by creating one still more detestable. In 1847-8, in various large emigrant fever hospitals in Canada, I made very extensive use of the chloride of zinc solution (Sir William Burnett's Disinfecting Fluid); I have also used it in many public establishments, and in emigrant and other ships, and my testimony as to its perfect efficacy in destroying disodours, merely resembles that of all who have made trial of it. As the chloride of zinc solution neutralizes that ammonia which is the vehicle of offensive odours, there is no reason to doubt that it acts similarly on that ammonia which, in a typhus ward, is (according to Liebig) the vehicle of the infectious principle or infecting essence. Analogy and theory lead fairly to this conclusion. And by experiment, I consider that the results of practice lead to the same conclusion. According to these views, the use of a disinfecting agent such as the chloride of zinc appears to be indicated, and by its employment it seems most likely that, during a cholera-epidemic, that part of the risk arising from infection will be either removed, or at least much lessened; infection is a subject so subtle and intricate, and cholera is a disease so eccentric and imperfectly understood, that positive assertions, either for or against, appear to be out of place; but if we cannot discover *the certain*, we can read *the probable*, and in doubtful cases, that rule which appears most likely to be the correct one, has sufficient authority to require to be followed in practice.

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* See Copland's Dictionary of Medicine, Brown in Cyclopædia of Medicine, and Dunglison's General Therapeutics, ii. 275.

† Chemistry applied to Agriculture and Physiology. Edited by Playfair. Chap. 13.

‡ In 1847-8 I was stationed in Montreal, whence I sent, on May 10th, 1848, the essay to the *Edinb. Med. and Surg. Journal*; being too late for the July number, it appeared in the next ensuing one for October 1848. The same essay was published in Dr Hall's Montreal Medical Journal (the *British North American Medical Journal*) on June 1st 1848; in the same month it also appeared in pamphlet form.

There are some who appear to doubt the possibility of destroying infection; for their consideration, I beg to quote Professor Christison, who, in his *Dispensatory*, speaking of chlorine and the chloride of lime, observes: "upon the whole actual facts, as well as the analogy of its action on putrid emanations, render the existence of the property of neutralizing infectious effluvia, far from improbable."

Consecutive Fever of Cholera.

Degree of Frequency.—For each of the three districts, I drew up a form to be filled up with various particulars, including the duration, separately, of the different stages of the disease. In the *Strood district* list of deaths, the column for consecutive fever is filled up opposite only two cases; a female aged 76, after two days of cholera, had five days of consecutive fever; and a male of two years, after two days of cholera, had five days of consecutive fever; but there are three other cases which, from the duration of the desease being stated to be as much as five or six days (if premonitory diarrhœa be not here included, which is not likely) were probably instances of consecutive fever. This makes five cases in 41 deaths, or one death from consecutive fever in about eight cholera deaths.

In the *Rochester district* list of deaths, a female aged 27, after three days of cholera, had two days of consecutive fever; and a male aged 11, after 24 hours of cholera, had ten days of "typhus" (as the column is filled up). There are three other cases which, from their assigned duration, five days (not including premonitory diarrhœa), were most likely cases of consecutive fever. These make five cases in 49 deaths, or one death from consecutive fever is about every twelve cholera deaths.

In *Gillingham district* the information contained in the register contributed only two entries to the column headed *consecutive fever*. A female, aged 40, after seventy hours of cholera, had twelve days of "congestive fever." And a male, aged 25, after four days of cholera, had five days of "cerebral congestion, with fever." From the duration assiged them, I think that six other cases were most likely instances of consecutive fever. These make eight cases in seventy-seven deaths, or one death from consecutive fever in about nine cholera deaths. According to this estimate, in the three districts, of the 167 who died of cholera, twenty-two died of its consecutive fever, or one in about seven persons (one in 7·59), or 13·17 per cent. This large proportion shows the importance of the consecutive fever.

Among the thirty-one cholera cases treated in Melville Hospital, there occurred six perfect specimens of consecutive fever; their names were Robinson, Spencer, Bennett, Harvey, Moss, and Hardinge (his first attack); the first two died. There was also one instance of secondary fever (Bovis). The proposed distinction between consecutive and secondary fever will be mentioned afterwards. Six cases of consecutive fever in thirty-one cases of cholera is 19·35 per cent. To take the non-fatal cases of cholera,—in twenty-five such cases, there were four cases of consecutive fever, or 26 per cent. To take the fatal cases of cholera, —in six such cases, there were two cases of consecutive fever, or 33·33 per cent. This proportion is much higher than that derived from the total mortality in the three districts, where, although we have the advantage of larger numbers whence to draw our conclusions, still I prefer to take as the just proportion that derived from the Melville Hospital cases, which I have now lying before me, detailed at great length, and with the symptoms noted several times daily. We are more likely to discover the truth from a certain number of cases, carefully and minutely described, than from a much larger number loosely described. In the great discrepancy between the two proportions, there is perhaps another proof of the insufficient amount of correct information which it is possible to extract from the present system of non-medical registration of deaths. There is, however, another view which may be taken, and it is this, that possibly, among the mass of cholera cases in a town where the sick have not been removed to a cholera hospital, but were treated at their own homes, and consequently could not receive as much attention as the patients of a naval, military, or civil hospital, there were comparatively few of them who survived long enough to become the subjects of consecutive fever, being cut off in the stage of vomiting, purging, &c. In all the above six cases of consecutive fever, the urine was scanty or suppressed, and there was either drowsiness or greater degrees of the same symptom.

Of a Distinction that may be advantageously made between the Consecutive Fever and the Secondary Fever of Cholera.

After a patient has struggled through the severe stage of cholera-proper, and obtains a respite from the great purging, vomiting, spasms, and unnatural coldness, he in some cases merely remains debilitated and weak, and suffers a little perhaps from salivation, or some other effect and sequel of the remedies that have been employed, but at other times he passes into one of four states.

1. Drowsiness and tendency to coma, with diminution or suppression of urine.
2. A feverish state, with chest symptoms.
3. A feverish state, with abdominal symptoms.
4. A combination of any two, or of all three, of the above.

In the register, the febrile state after cholera is sometimes loosely called "typhus," and by other names. In some works, *consecutive fever* is the name given to all the above four varieties; and in a few other publications, *secondary fever* is also applied to all the kinds. I consider that the first set of symptoms are of vastly superior importance and danger to the others, and that it is better to give different names to symptoms so very different in their nature, cause, importance, and in the kind of treatment they require. I would therefore restrict the term *consecutive fever* to those cases where we have these diagnostic symptoms after cholera, a feverish state, drowsiness, and a tendency to coma, the secretion of urine being scanty or suppressed. The *cause* of the consecutive fever is the retention in the blood of the urea, which remains, and acts as a poison on the brain, instead of passing off by the kidneys. The *treatment* is, of course, by those means which may be expected to stimulate or revive the lagging or dormant energies of the kidneys.

Secondary Fever of Cholera.

This term may, with great practical advantage, be confined to cases where, after cholera, there are febrile symptoms, with either

(1) signs of irritation or congestion in the lungs, palpitation of the heart, &c.; or, (2) irritation or slight inflammation of the intestinal mucous membrane; or, (3) a combination of these. Any instances of the above, with also drowsiness and deficient urine, ought to be placed under the more important head of consecutive fever. Instances where, in addition to chest or abdominal symptoms, there is also a somewhat lessened secretion of urine, need not be placed under consecutive fever, unless there be also a tendency to drowsiness. As to the *nature* and *cause* of secondary fever,—in the lungs, in some cases, there is slight obstruction to the easy circulation of the blood, from the circumstance of its having become thicker in consequence of having lost so much of its thinner part by the serous diarrhœa. In the alimentary canal some irritation must often have arisen, from the variety and quantity of the medicines administered. Sometimes, towards the termination of a cholera case, dysenteric symptoms appear for a day or two, but these it does not appear to be necessary to class under the head of secondary fever.

Post Mortem Appearances.

In three examinations there was nothing observed more than is usually seen in fatal cases of cholera. It is stated in some standard works that in fatal cholera the bladder is *always* contracted and empty. In Ader, ill eleven hours, the urinary bladder was contracted and empty. In Woodgate, ill three days, it was contracted, and contained an ounce of urine. In Robinson, ill nine days and six hours, it contained a pint of urine; he had not urinated for four days before death, and before that the urine was very scanty; he died of consecutive fever.

Treatment of Cholera.

The treatment of this pestilence naturally resolves itself into five heads; (1) precautionary measures, or the prophylactic treatment; treatment of (2) the premonitory diarrhœa, or the epidemic diarrhœa; (3) cholera; (4) consecutive fever; (5) secondary fever.

Among the precautionary measures, it is well to attend to being clothed warmly, to avoid travelling at night, especially in an exposed manner, as on horseback, or on the outsides of coaches. Cathartic medicines are to be avoided, and also cold saline purgatives. Unusual articles of food, and any articles likely to produce diarrhœa, are to be shunned.

Treatment of Diarrhœa.—Any of the usual modes of checking diarrhœa may be employed. For children, Dover's powder and mercurial chalk; or chalk mixture. In adults, ten drops of laudanum every three hours till the diarrhœa is checked, or till three or four doses have been taken; or thirty drops at one dose; or a pill composed of two grains of calomel, and one fourth of a grain or half a grain of opium powder, every two hours. In the aged, a draught of tincture of opium, 10 minims; spiritus ammoniæ aromaticus, half a drachm; and one ounce of peppermint water, every three hours. It is well to give as little opium as possible, as, in the event of the diarrhœa persevering in passing into cholera, it is of advantage to the patient to have been the recipient of as small a quantity as possible of a drug which acts like opium. Another matter to be attended to is, that not more than three or four doses of opium be given in the solid form; if any more doses are given, it is much preferable to give in a liquid form.

Treatment of Cholera.—During the epidemic of 1832, I resided in North Shields, and the usual treatment then and there was by small doses of calomel (gr. ii.) and opium (gr. ¼) every three or four hours. Effervescing draughts with carbonate of soda and tartaric acid were also plentifully administered. A cholera hospital was opened, but few patients could be induced to enter it, that class of the public for whom it was intended having some almost incredibly absurd ideas respecting it, these sensible individuals of the intellectual nineteenth century believing that it was opened for the sole and special purpose of giving the surgeons an opportunity of poisoning their patients! The same absurd notions existed in other parts of the country.

Dr Craigie (*Practice of Physic,* vol. ii. 1099, *and Edinburgh Medical and Surgical Journal,* Jan. 1849) and others approve highly of venesection, but only at the commencement of the attack. I presume the manner in which bleeding is useful, is, by lessening the quantity of blood in the system generally, and so leaving a smaller quantity of its thicker part to render difficult the circulation through the lungs after serous diarrhœa has carried off much of its thinner part. It may be useful also by removing some part of the urea already existing in the blood, so that, if the kidneys refuse to do their office, there is less urea in the blood to act as a poison on the brain.

Some practitioners think highly of turpentine, and give it as an astringent. Where it has appeared to be of service, I am inclined to think that it has been beneficial by acting as a diuretic. In Chatham, in 1849, among practitioners generally, I believe, some cases were, especially at the beginning of the epidemic, treated on the stimulant plan, with brandy, &c., and also calomel and opium. Afterwards the stimulant plan was abandoned, and small doses of calomel, either alone, or with opium, were given. Two grains of calomel, with or without two drops of laudanum, at intervals, varying from every ten minutes to every hour. Latterly in the epidemic the laudanum was not given, but simply the calomel in small and frequent doses.

After having seen different modes of treatment employed, the one I at present prefer is the following:—It does not appear to be a good plan to give two or three drops of laudanum several times every hour with each dose of calomel, as it may counteract the effect desired from the calomel; it is better to give the calomel alone, two grains every ten, twenty, or thirty minutes, according to the urgency of the symptoms. In adults, in some cases, it may be well to begin with a scruple dose of calomel as is usual in India, with the view and expectation of its acting in a sedative manner on the stomach, and not as a cathartic. To restore warmth to the surface, bottles of hot water, or heated bricks wrapped in flannel, or bags of heated bran, may be used.

Hot Air Bath.—When these means do not succeed, the hot air bath may be used. A convenient way of using it is by having a semicylindrical frame of basket-work which covers the patient from the chin to the feet; the lower end of it is filled by a board, at the lower part of which is an opening to admit the extremity of the bent tube, conveying the heated air from a spirit-lamp, which is placed on a stool at the foot of the bed. Three or four blankets cover the basket-work. Where it is not convenient to have the proper apparatus, two long stools, placed on their sides in the bed, one on each side of the patient, and at the foot of the bed, a short wooden stool between them will answer the purpose; the hole in the top of the latter gives admission to any metallic tube (on ship-board, a bent speaking trumpet will answer) conveying the heated air.

We made experiments with spirits of wine and naphtha, to see which was to be preferred. Though naphtha cost less a gallon than spirits of wine, yet the lamp burned more of it, so that (as the prices of each were at the time) the cost was almost exactly the same. Besides, there was some objection to the naphtha from its odour, which is undesirable for the patients, and may conceal odours which ought to be detected. In a public hospital, there is a possibility of spirits of wine being used for other purposes than those ordered by the medical officers, and for those interested in these establishments it may be convenient to know the expense of using the spirit-lamp, possibily for a number of patients at the same time. Spirit of wine was at 22s. a gallon, or 2s. 9d. a pint; the lamp of the cholera hot-air bath or heated-air bed consumed sixteen ounces in ten hours; used for twenty four hours, it consumed forty ounces, costing six shillings and sevenpence. Those about to use it for a number of cases in a cholera hospital will be thus able to know what the expense of it will be; it will of course depend on the current price of spirit of wine. With respect to America (either British America or the United States), the price of spirit of wine is much less than in Britain. In the 31 cholera cases in Melville Hospital, the hot air bath was used in nine cases; of these, five were fatal: of the non-fatal cases, it was used continuously,—in the instance of Pinfield for nineteen hours, in the case of Hardinge for forty hours, and in that of Harvey for forty-one hours; this shows how long it may be necessary to persevere in the use of the remedy.

As to other methods of restoring warmth, frictions have the disadvantage of requiring the bed clothes to be raised. The warm bath is very well for the twenty minutes or so that the patient is in it, but if he remain longer, faintness is induced. A sheet wet with hot water, and wrapped round the body, answers with children, but not with adults, who soon throw it off. For the vomiting, sinapisms to the epigastrium will sometimes be of service.

In *keeping the case* of a cholera patient, every time, usually three or four times a-day, that an entry is made, it ought to be noted whether the urine is in natural or in diminished quantity; this ought to be done from the very commencement of the case; as soon as any diminution in the quantity of urine is observed, then, in adults, gin in very small and frequently-repeated doses ought to be administered; two ounces every half hour or so; we ought not to wait for drowsiness to appear; it is no doubt easier to keep up and stimulate the action of the kidneys than it is to induce them to take up their office after the urinary secretion has been entirely suspended. In children and delicate females, spirit of nitric ether may be used instead of gin. There are other diuretics, some of which, in particular cases, may be preferable to gin. I do not approve of stimulants, such as brandy or whisky, and gin is here recommended, not as a stimulant, but as a diuretic. Mr Drummond showed me the great advantage and propriety of occasionally using the catheter, where there had been no micturition for a day or two, and sometimes from such patients some ounces of urine were thus removed.

In cases where much calomel has been given, sometimes an unpleasant degree of salivation follows, for which alum or other gargles are required; as soon as the gums become tender, it is better to discontinue the calomel, as salivation is not the effect that is desired, but is only an evil which, in some cases, cannot be avoided.

Treatment of the Consecutive Fever.

Cupping over the region of the kidneys, and blisters to the same part, have been advised for the purpose of stimulating the kidneys; but most likely, in many cases, the patient is by this time too low to authorise any loss of blood by cupping; blisters are awkward applications under the circumstances. I prefer administering diuretics; to adults, gin; and to children, the spirit of nitric ether may be given with advantage. Leeches to the temples and blisters to the nape of the neck are sometimes applied to relieve the cerebral congestion; leeches do not appear to be advisable, and blisters are, at best, symptomatic treatment; an early and diligent use of diuretics will, I am inclined to think, render these applications unnecessary.

Treatment of the Secondary Fever.

In the 31 cholera cases in Melville Hospital, I consider that only one instance occurred of secondary fever (there were six instances of consecutive fever); the patient's name was Bovis; after cholera he had feverishness, with at first chest symptoms, and then abdominal symptoms. The secondary fever is of but trifling consequence compared with the consecutive fever. The blood, having lost so much of its serum, becomes of a thicker consistence, and passes with difficulty through the minute vessels of the lungs, and hence difficult breathing, palpitation, and sometimes pain in the chest. A blister may be applied, and diluents and time will soon effect a cure. As for the abdominal symptoms, the intestinal mucous membrane having been the seat of the commotion, and having also probably been irritated by the variety and quantity of internal medicines administered, requires some time to return to its natural state. Remedies which do not come in contact with the irritated surface are to be preferred, and hence, fomentations to the abdomen, the turpentine epithem, a sinapism, or blisters may be used; and, generally speaking, the unimportant symptoms as they appear may receive symptomatic treatment. Separating those slight cases, which are here called secondary fever, from the very important and widely-different cases of what is here distinguished as consecutive fever, will, it is hoped, have the effect with any young practitioner, of directing his careful attention to those symptoms by which it is most required.

There are good grounds for believing that the subject of consecutive fever has not been *universally* considered with due attention. Fatal cases of cholera are recorded, and detailed with great minuteness as to many of the symptoms, without any mention whatever being made of the state of the urinary secretion, and where internal evidence is incidentally given that the patient has died of consecutive fever, doubtless from the urinary secretion having been suspended. In the registers, the fact that the duration of the illness of a cholera patient is sometimes stated to have been, cholera for *so many* days, then "typhus" for *so many* days, is perhaps also a proof that the real nature and cause of the febrile state after cholera, with disposition to coma, has not been considered, and not having been considered, the case perhaps has not received that kind of treatment which it would have done, if it had been thought that the retained urea was poisoning the blood, which, acting on the brain, was gradually inducing fatal coma. It is not here pretended that if such cases are recognised they are sure to recover; thus, in Melville Hospital, of six such cases, two were fatal; but if six such cases of equal severity were not recognised, it is likely that five or six of them would end fatally.

Further remarks would be here offered on various points, but the writer is afraid that he has already extended to too great a length these observations on a disease on which so much has been written. In the topographic sketch, and in some of the allusions to the different establishments, perhaps those belonging to the town and to these establishments may observe some particulars a little deficient in that perfect accuracy which a temporary resident finds it difficult to secure. As it is not unlikely that this account will be again printed, I shall be glad to receive from Chatham, from professional friends either in private practice or in the public services, or others interested, any amendments or additions they may have the kindness to make. As I am about to change my address, if such communications be addressed to me, to the *care of John Warrack, Esq.*, 10 *Bonnington Place, Edinburgh,* they will be carefully forwarded to their destination.

Halifax, Nova Scotia,
April 1850.

ART. II.—*Contributions to the Military Medical Statistics of the Bombay Presidency.* By JOHN KINNIS, M.D., Deputy Inspector-General of Her Majesty's Hospitals.

PART I.—*On the Military Stations, Barracks, and Hospitals, occupied by Queen's Troops, in the Bombay Presidency, from October* 1847 *to July* 1850.

DURING this period, Queen's troops have been stationed at COLABA, BELGAUM, KIRKEE, POONA, DEESA, KURRACHEE, HYDERABAD in SCINDE, PESHAWUR, and ADEN. For the materials of the descriptive notices here given, I am indebted partly to the reports of my industrious and talented predecessors and co-labourers of the Queen's Medical Service in this Presidency, partly to my own observations and inquiries during two Annual Inspection Tours, which embraced every station I have attempted to describe.

COLABA.

a. Station.—COLABA is a small, narrow island, to the south by east of Bombay, continuous with it at ebb tide, but separated at high-water by an arm of the sea, 1100 feet wide, across which have been thrown a stone causeway and bridge, with a carriage-road. It is little more than two miles in length, varies in breadth from 1650 to 350 feet, and forms the south-west boundary of Bombay harbour, in north latitude 18° 50′, east longitude 72° 53′. The soil of Colaba is calcareous, and consists chiefly of minutely comminuted shells, intermixed with clay, which is derived from the decomposition of the basaltic rock, forming the substratum of this and the neighbouring islands. Towards the southern extremity, the rock rises above the surface, and attains its highest elevation, of 50 feet above the level of the sea, in the mount on which the lighthouse stands. In other parts, the island rises very little above high-water mark. In the south-west monsoon, and during spring tides, which rise 18 feet, the sea encroaches on the land, and, at neap tides, leaves the irregular and rocky beach covered with slime and mud, and marine vegetation, which occasionally exhale very offensive odours. The trees, shrubs, and flowers that adorn the compounds and dwelling houses of the inhabitants, are almost the only vegetable productions cultivated in Colaba. The seasons are divided into the hot, cold, and wet, and observations of the temperature, extended over eleven years, give this result:

		Average.	Max.	Min.
Hot season,	March 1 to May 31,	85½°	95°	79°
Wet ,,	June 1 to Sept. 30,	83½°	72°	50°
Intermediate,	Oct. 1 to Nov. 15,	84°	95°	72°
Cold season,	Nov. 16 to Feb. 28,	78°	85°	65°

Betwixt the rainy and cold seasons the temperature is generally high, from the sun being still near, but without the clouds, which had intercepted his rays in the monsoon. The barometrical range is inconsiderable; but the humidity of the atmosphere and of the soil, during the south-west monsoon, is very great. Fifty-three inches of rain have been known to fall in one month, that of July, and the annual average of eleven years was 78·47. The soaking atmosphere of the monsoon, with the thermometer so high as 80°, imparts a sensation of chilliness, every thing becomes damp and mouldy; a piece of polished iron will rust in a few hours, and woollen clothing is rendered indispensable.

Though Colaba has been considered one of the healthiest spots in the Presidency, from November to May, the Queen's regiments do not always find it so. Fewer admissions may doubtless occur in December, January, and February, the coldest season, yet the casualties are more numerous in these than in any other months of the year, more especially from hepatic abscess and acute dysentery, separate or combined. The prevailing diseases are, remittent fever, dysentery, hepatitis, and not unfrequently cholera morbus, though, fortunately, there has been no very severe epidemic visitation of that disease in any part of the command since 1846.

b. Barracks.—COLABA Barracks are on the west side of the island, within from 50 to 100 yards of the sea-shore, and about twelve feet above high-water mark. They consist of six large buildings, here called pendals, of burnt brick and mortar, with flagstone floors, tiled roofs, and plastered walls, twenty inches thick, for single men; and four, of a smaller size, of mud and bamboo, with clay floors, tiled roofs, and walls only four inches and a-half thick, for married men and their families.

Large Pendals.—The large pendals are disposed in two parallel lines, with a north-eastern aspect,—four in the first, two in the second,—at a distance of 140 feet betwixt the lines, and 100 feet betwixt every two of the same range. Every large pendal, with its verandah, ten feet wide, surrounding it, covers a surface of 230 by 43 feet, and is divided into one principal, and four small rooms for serjeants at each end. The large room is 212 feet long, 23 wide, 13 high at the sides, 23 in the centre, to the ridge pole.

The floors of the front pendals are paved with a flagstone, so attractive of water, as to be never dry in damp or rainy weather. Every pendal has five folding doors, and ten windows on each side, and four doors opening into the smaller end apartments. The door-ways are eight feet high, and have folding pannels, fifteen inches deep, above the doors. The window openings are five feet eleven inches high, three feet wide, and within two feet of the floor. On the lee-side they are glazed, without shutters; on the windward side, shuttered, without glass; on both sides, divided into two pairs of sashes or pannels, graduated in size to regulate the intensity of the air, heat, and light admitted through them. In the front pendals, the slope of the roof is broken, and hitched up three feet in its whole length on both sides, and the interspace filled with perpendicular sashes of glass, which may be opened and shut at pleasure, by ropes and pulleys. Instead of this, the two rear pendals have ten ordinary skylights, each of ten panes of glass, on the lee-side roofs only. On the windward side of all the pendals, the verandahs may be partially or completely closed, by a lower and an upper series of shutters, on horizontal hinges, their whole length.

Betwixt the doors and windows are racks and pegs for arms and accoutrements, and every soldier has, at the foot of his bed, a box for his clothes and necessaries. Each of these barracks was originally intended for 150 men, and the whole cantonment for 1000. The number they are now required to accommodate is 102 only, being 94 in the large, and one serjeant in each of the 8 small rooms. Every man, therefore, has 52[*] superficial feet. The bedsteads consist of 3 planks supported on tressels, 45 on each side, with 4 feet 8½ inches for each,[†] and 2 at each end, leaving an interval of 10½ feet betwixt the two rows, and an average space of 18 inches betwixt every two beds. From the height of the rooms, and the want of ceiling, the proportion of cubic space for every man is more considerable, though the peculiarity in the construction of the roofs would make the exact estimate difficult.

Twenty-two feet behind every pendal, and joined to it by a covered passage, are two washing houses, 17 feet 7 by 9 feet 8 in size, with an open verandah betwixt them, in which stand a water cask and a tub for ablution, but without basins of any kind. The men have provided for themselves, in addition, eight or nine large water chatties. In these washing houses are no windows, but innumerable holes, 6 inches square, for the admission of light and air, obliquely through the walls.

Small Pendals.—The small pendals, four in number, are at the left end of the large, and 90 feet from them. The front and rear pairs are 44, and the two of each line 26 feet apart. They form each a single room, 95 feet long, 20 broad, with side walls 10 feet 9, and ridge pole, 16 feet 2 inches high. Their walls are of bamboo and mud, blue washed, and 4½ inches only in thickness, their floors of clay, and roofs tiled. They are surrounded by verandahs, and have each four doors and ten windows. The room and verandah roof form one continued slope. The windows have folding shutters but no glass.

LATRINES.—The privies are three in number, behind and to windward of the pendals, a few yards within, and 12 feet above high water mark; two for men, joined to the six larger, one for women, joined to the four smaller pendals by raised and covered

[*] $212 \times 23 = 4876 \div 94 = 52.$

[†] $212 \div 45 = 4.71.$

ways, terminating in a bridge path, and from 200 to 400 feet in length. The sea breeze passing over the soil of the privies, uncovered at low water, and exposed to a powerful sun, spreads an offensive and unwholesome vapour over the whole cantonment.

Other Buildings.—Fifty paces in front of the barracks, and at proper intervals, are the cook houses, four in number, the quartermaster serjeant's house and stores, the serjeant armourer's shop, and a ball court for the men. Some hundred yards further in front, and on the opposite side of the public road, is the more elevated but still superficial ridge, on which the mess and dwelling-houses of most of the officers have been built, and which has been recommended, within the last twelve months, by a mixed committee of the Honourable Company's officers, as well as many years ago, by the late Inspector-General Loinsworth, as a site for new and improved barracks, more eligible than that on which they have been so long permitted to stand. The canteen is half way betwixt the two barracks of the rear line.

QUEEN'S DEPÔT.

The Queen's Depôt is near the middle of the island, on the road from Bombay, and consists of two buildings, on different sides of an enclosed court, 200 by 140 feet in size. On the third side is a guard-house, and on the fourth a kitchen. The brigade-major occupies a hired bungalow near it, and the depôt serjeants-major a temporary building, communicating by doors with the largest of the two occupied by the men. This is a substantial stone building, with a porch in front, in which some of the invalids take their meals, and a verandah to the porch, in which they perform their ablutions; but which is much too small for that purpose. The house is 80 feet by 60 in length and breadth, and divided into one large central and six smaller side rooms, with several lobbies. It has a lofty roof, two sky lights, and on each side three large windows and one door. The windows are shaded by matting. Eighty men, accommodated in this building, would have each nearly 60 superficial feet.

The second is a temporary building, with a back wall of stone, front and sides of mud and wattles, only four inches thick, a tiled roof and clay floor. It is 97 feet by 20 in size, and sub-divided into two apartments. The side walls are 11, and the ridge pole 17½ feet high. At the rate of 60 superficial feet for each, it will accommodate 32 men. The margin of the roof is raised some inches above the front and side walls, to give free issue to heated air.

To windward of, and seventy paces behind the depôt, with a overed path and bridge betwixt them, is the privy, within high vater mark. This path has a hand railing for one third of its ength, to prevent men, frequenting it in the dark, from falling ɔver among the rocks on either side.

Surface drains, lined with uncemented stones before, behind, and betwixt the barracks, carry the superfluous water of the rainy season into Back Bay.

Prison Cells.—Outside of the enclosure of the Queen's Depôt are three prison cells, and near the hospital ten more. Four of these are attached to an old lock-up house. The rest have been built since 1846. These are in groups of six and three, arranged on two sides of a paved area, which is nearly ten feet wide, and raised two feet from the ground. The cells of the same row are ten feet apart, and those of one row opposite the interspaces of the other. The walls are of brick, floors of clay, roofs of tile, each is nine feet eleven inches square inside, and they are lofty and well ventilated. There is a small privy at the end of each range. The two ranges are enclosed by wooden iron-spiked railings.

The barracks were built at different times, betwixt 1813 and 1827, when the last pendal was completed.

Sick Officers' Bungalow.—On the same side of the road, and a little to the north of the Queen's Depôt, are two bungalows for the accommodation of officers, sent sick from other stations to Bombay. In each bungalow are a sitting and two smaller side rooms, with dressing and bathing closets &c., one being intended to accommodate two captains, and the other two subalterns. In the compound are two kitchens, stabling for four horses, and accommodation for native servants.

c. Hospital.—The Hospital was built in 1822–23, and is on the eastern side of the island, to the south of the officers', and 320 yards beyond the men's quarters. The site is low and swampy, to correct which a large tank has been excavated and arched over, by means of which much of the water that formerly inundated the front of the hospital is carried off, and the floors and walls rendered much drier. The walls are of burnt brick and chunam, the roof tiled, the floor of flagstones, raised about two feet and a half above the surrounding level. The building consists of a centre, bearing N.E. by N., and two wings, crossing the extremities of the centre at right angles, to form two oblong squares, open to the east and west, or with the inner side common to both, and the outer deficient. The centre is 207 feet in length, 23 in breadth, 13 to the top of the side walls, and 21 to the ridge pole of the slanting roof, which is open to the tiles. It is divided into three wards, one capable of accommodating 32* patients, and two capable of accommodating 16† each.

Each of the wings is divided into two wards, capable together of accommodating 24‡ patients. The centre is united to the wings by two small wards, capable of accommodating 6§ patients each; but required to be used as surgerics for the Regimental and Queen's Depôt Hospitals. An excellent verandah, ten feet and a-half wide, surrounds the whole building, and, on the western moonsoon side, is furnished with glazed windows, moveable on pivots, both outwards and inwards, which obviates the necessity of closing the shutters, except during heavy storms of wind and rain. The north and east sides have eight glazed sky-lights. The doors and windows render the ventilation complete. Immediately behind the wards are the hospital-steward's quarters, apprentices' rooms, clothing, medical, and straw store-rooms, and the dead house. A little to the eastward is the female hospital, sufficiently large for 14‖ beds, and, near the opposite end, the houses of the two apothecaries.

The centre and right wing are the hospital of the corps stationed for duty in Colaba, the left wing that of the Invalid and Queen's Depôt. Water has been hitherto supplied from three tanks and one cistern, during the monsoon; and up to about the 1st of May, when it used to get low and unfit for use, and was supplied from Bombay by the commissariat, at the rate of five gallons a-day for every individual on the strength of the regiment. This mode of supply, however, will be now discontinued, as cast-iron pipes have been recently laid to conduct water from the springs in Bombay esplanade to Colaba, a distance of two miles.

BELGAUM.

a. Station.—BELGAUM, the head quarters of the southern division of the Bombay army, is in the South Mahratta country, in latitude 15° 20′ N. longitude, 74° 41′ E., 228 miles from Poona, 318 from Bombay, 76 from Vingorla on the western coast, and about 30 to the east of the Western Ghauts. The Vingorla road passes over the Ramghaut, an ascent of four miles, and so steep, that a cart, brought to the bottom by two, requires six bullocks and from six to seven hours to reach the top.

	Length.		Breadth.		Superficial feet.		Superficial feet for one Patient.		No. of Patients in each ward.		No. of wards.		Total No. of Patients.
*	102	×	20	=	2040	÷	64	=	32	×	1	=	32
†	50	×	20	=	1000	÷	62½	=	16	×	2	=	32
‡	30	×	25	=	750	÷	62½	=	12	×	4	=	48
§	20	×	20	=	400	÷	66½	=	6	×	Surgeries		
‖	30	×	30	=	900	÷	64	=	14	×	1	=	14

The following tabular statement of its temperature and moisture in the different months of last year, is given by assistant-surgeon Dr Anderson of the 22d, in his annual report on the health of the 78th Regiment.

1848–49.	Maximum.			Minimum.			Mean.			Monthly Mean.	Rain.	
	Sunrise.	2 P.M.	Sunset.	Sunrise.	2 P.M.	Sunset.	Sunrise.	2 P.M.	Sunset.		Inches.	Cents.
April, ...	76°	92°	84°	67°	76°	86°	76°	87°	78°	78·6	2	07
May, ...	74	88	82	68	74	71	70	83	78	79	6	50
June, ...	70	78	75	67	72	70	70	75	71	72	7	99
July, ...	72	80	75	68	69	68	69	73	78	71	19	80
August, ...	69	74	72	67	69	68	68	72	70	70	5	40
September,	72	80	78	86	72	70	69	75	72	72	3	69
October, ..	74	84	79	67	70	68	70	78	75	74·3	5	83
November,	72	79	76	66	72	68	68	76	73	73·3	1	57
December,	68	80	76	64	75	70	66	77	73	72	0	0
January, ...	64	81	76	52	69	60	61	76	73	70	0	52
February,	68	87	79	60	80	73	65	83	77	71	0	0
March,.. ..	72	90	83	63	83	73	69	86	77	77·3	44	34
Average, ...	70	83	78	65	75	70	68	78·4	75	75	53	37

The seasons of Belgaum are the rainy, cold, and hot. The southwest monsoon and rainy season prevail from May to October. The rains set in with great violence, generally towards the evening, or from night to night, and are generally preceded or accompanied by tremendous thunder-storms. By the middle of May the hot weather has ceased, and the country become green, and in the continuous rain-falls of July and August the temperature is low, the air damp and raw, making fires pleasant. 53·37 inches of rain fell in the year 1848, and 19·80 inches, or considerably above a third of the whole, in July. With exception of one heavy shower, there was hardly any rain from November to March; in this interval the heat was moderate in the day, and the night very cool, without the piercing cold experienced at more inland stations. The monsoon continues sometimes to be felt in the end of October and beginning of November, with cool breezes and occasional rain. The hot season is of short duration, beginning in February, attaining its height in March, and ending in May. In the cold months, and up to April, a dry east wind prevails during the day; but from January, the atmosphere over the Ghauts being cool and moist, a westerly sea-breeze sets in regularly every afternoon about 4 P.M., and makes the climate delightful. This refreshing breeze was absent in February 1849 only four, and in March only two, days.

Belgaum is next to Colaba in uniformity of temperature and degree of atmospheric moisture, and holds a middle place, in the dry season, betwixt the low country and the hill convalescent stations. It is two degrees farther south, 200 to 300 feet higher, and somewhat nearer the Ghauts than Poona. At Belgaum, the temperature is lower and more steady, and nearly twice the quantity of rain falls. The cold westerly winds of Belgaum, in December and January, do not blow at Poona; and while hot winds prevail there, in March and April, a soft sea breeze blows the whole afternoon at Belgaum, causing its climate to approximate to that of Mahableshwur, with the differences due to latitude and elevation. It is the coolest and healthiest station occupied by Queen's troops in the presidency. The average maximum heat at 2 P. M. is 82°, and the average minimum, just before sunrise, 65°. The highest maximum at 2 P. M., 92° in April, the lowest, 74° in August. During two or three unusually cold days, the thermometer fell to 52°. The daily range is inconsiderable, and the mornings and evenings are pleasantly cool, even in the hot weather.

Venereal and rheumatic complaints are peculiarly prevalent and severe at Belgaum; and the establishment of a sanatarium at Vingorla, 76 miles distant, on the sea shore, or at Raghur Fort, which overhangs the sea, 10 miles farther south, has been suggested, as a probable means of relief and cure.

The native city is large, and said to contain 11,000 inhabitants. The fort is on its east, the military cantonments on its west, distant from each other above two miles, and the village of Shapoor, within half a mile to the south. The European barracks and hospital are built on a low, dry, gravelly ridge, which terminates half a mile to the west, in a small conical hill, and slopes very gradually on the east to the native town and fort. These stand on the edge of a rich alluvial well cultivated valley, having an easterly course, with a range of hills to the south; on the higher western extremity of which is the small fort of Yellowghur. The surrounding country is irregularly mountainous, interspersed with ridges of gravel and small alluvial plains and valleys. Four or five miles off the hills are higher rocks, covered with jungle, which generally run west to merge in the Ghauts. The low, stony, and gravelly hills to the east and north become covered with grass at the end of the rains.

There are are no considerable rivers, swamps, or marshes within many miles of the cantonment Rice, the sugar cane, and excellent potatoes, are cultivated in the neighbourhood. On both sides of the native town, and on the rising ground appropriated for the officers' bungalows, are clumps of bamboos, with mango and other large trees. In the fort, which is laid out in garden-grounds, richly cultivated, and surrounded by a ditch a mile and a-half in circumference, are the houses of staff-officers, an arsenal, artillery barracks, an English church, two old temples, a mosque, and other buildings.

The cantonments comprise quarters for one European and two native regiments.

b. Barracks.—The European barracks consist of two parallel ranges of buildings, not chequered, but opposite; seven in the first, fronting south-south-east; six in the second, with an interval of sixty yards betwixt the two ranges, and fifteen to eighteen yards betwixt the buildings of each. Eleven are used as barracks, one as the canteen, and one as defaulters', serjeants' mess, and band rooms. At proper intervals, behind the barracks, are two kitchens, and two privies; in one line, the school-room, library, and serjeant-major's house; in another, and farther back on the northern slope of the ridge, the patcheries, or quarters for married men. On the face of an opposite ridge, 400 yards from the barracks, and separated by a small stream, which becomes rapid in the monsoon, is the hospital. On the banks of this stream are two wells, which supply, one, the barracks and hospital with excellent drinking-water; the other, a plunge-bath and kitchen garden with water, sufficiently pure for bathing and irrigation,—the expense for making and working the last being defrayed from the canteen fund.

Of the eleven barracks, the large rooms are twenty-four feet in breadth; three 156½ feet, and eight 192 feet in length. The walls are thirteen feet high, and from one foot nine inches to two feet thick. Each has three or four ventilators in the roof, eight doors, and twenty to twenty-eight windows. The walls are of stone, plastered, and whitewashed; the roof of tiles, with chunam and lathing under them; the floors of the verandah and rooms of hewn stone, and raised from the ground only to meet irregularities of surface. The windows unglazed; the shutters and doors of wood. On the south-west front is an open verandah, ten feet eight inches wide, with a roof projecting two feet beyond the floor. This opens at each end into two serjeants' rooms, seventeen feet by ten in size. There is no verandah behind; in its place, at each back corner, are a washing closet and a urinary, ten feet by six each,—the latter communicating with a small cess-pool, seven feet beyond the end wall. The washing closets have chatties of drinking water, as well as casks and tubs for ablution. Some of the cess-pools are not larger than two feet square. The urine is removed daily, on bullocks, in leathern bags. The urinaries in the back corners of the barracks are very offensive.

Every barrack is surrounded by a trench, fourteen inches wide, and two feet deep, to carry off the rain caught by its roof.

The three smaller barrack-rooms are furnished with sixty, and the eight large with seventy-two, arm-racks; but this proportion is generally exceeded, as seventy-six men frequently sleep in one of the smaller, and eighty-five in one of the larger size. When crowded, men sleep opposite and close to the windows, either with these shut, to the inconvenience of the whole room, or open, with themselves exposed to a draft of cold air. In the dry months, the men breakfast and dine in the verandah, which being open and exposed to the full violence of the south-west monsoon, cannot be used for that purpose during several months of the year, when the doors and windows on that side must be kept shut, and the men crowded into the inner room, rendered very dark by the want of glazed windows, and hot and filthy by this appropriation. Lieutenant-Colonel Douglas, in 1847, and Superintending-Surgeon Montgomery, in 1849, recommended the present verandah to be enclosed by a wall, with glazed windows, and another to be built, but left open, on the north-east side, improvements which, it is to be hoped, will be yet adopted.

The quarter guard is seventy-five paces to the south-west of the barracks, and consists of a lock-up house, twenty-five feet long, six feet and a-half broad, with iron-barred windows, and a guard-room for a serjeant, corporal, and twelve men. At some distance are the prison cells of the old barracks, still in use, but few in number, and low in the floor, though of good construction. There are other cells attached to the guard-room, at the fort gate, where prisoners sentenced to confinement before trial are placed.

The latrines are thirty-three paces from the nearest barracks. Each has a screen wall, in front of four doors, with twenty-six seats in one line, and ventilation holes, fourteen inches in diameter, in the walls. The latrines are emptied twice a-day, from under another screen wall behind.

The canteen is in the centre of the second line of barracks. In September 1849, the average strength of the non-commissioned officers and men of the 78th regiment was 1087. The consumption of

Arrack, was .	770 galls.	Porter, was .	2592 galls.
Brandy, .	50 „	Port Wine, .	2 dozen.
Gin, . .	1 „	Bottled Beer, .	320 „
Rum, . .	26 „		

The money spent by the men for these articles was, 4429½ rupees.

The canteen prices being per dram of three ounces.

Arrack, .	1 anna.	Port Wine, .	1 anna.
Brandy, .	2½ „	Beer, per bottle .	4 „
Gin, .	2½ „	Draft Porter, per quart, .	2 „
Rum, .	2 „		

The commissariat supplies arrack and porter, a Parsee contracfor the other articles. Last month bottled beer was one anna cheaper per bottle than now, and the consumption diminishes as the price increases.

In the regimental school, the pupils are ninety men, twenty-three boys, and twenty girls. Children go to school from four to fourteen years of age, and are taught reading, writing, grammar, arithmetic, and geography.

Patcheries.—The patcheries are four in number. At some distance on their right is a workshop, in which are plied the five crafts of carpenter, shoemaker, tinsmith, sadler, and gunsmith. The patcheries are divided into two pairs, by an interspace of forty-two paces, and their privy is fifty yards behind them. Each of them accommodates twelve families, with two small apartments, a front verandah, and a cooking place.

The plunge-bath is in the bottom of the valley, near the patcheries, nineteen feet long, five and a-half feet deep. It is of stone, lined with chunam, has a thatched roof, boarded floor, a raised wooden platform along one side and end, with a flight of steps to the brim. Its supply of water is drawn by bullocks from a well at hand. Another well near the hospital supplies it and the barracks with the best water. It is thirteen feet wide, the surface water twenty-seven feet deep. The water is drawn by two bullocks working a windlass, and decanted from leathern bags into an oblong stone cistern for use.

c. Hospital.—Men's.—The hospital is surrounded by a thick stone wall, eight or nine feet high, which encloses an area of 426 by 162 feet. The dead-house is on the outside of the wall, twelve feet from the left front corner, and is fifteen feet ten inches square. A porch, fifty feet long, projects twelve feet from the south wall, and, on different sides of the gateway, fourteen feet wide, are the hospital-serjeant's house, and guard-room. The hospital consists of a centre and two wings, joined together by covered ways, the wings being 141 feet apart, sixty feet from the front, and forty-three feet four inches from the side walls. The central part of the area is covered with gravel, the side parts with grass; and these last would be greatly improved by a row of trees planted in each, to enable convalescents to take exercise safely under their shade. The cooking house is at one extremity, and the privy in the middle of the back wall; the former connected to the centre wing by a covered way, which divides the back court into two. The centre and right wing are one storey, the left wing two storeys high, each wing furnishing one large ward, twenty-two feet wide. The central is 51½ feet long, 14½ feet high in the wall, twenty at the ridge pole, with a door and two windows in each side, and six ventilation openings about four feet by two, within fifteen inches of the roof. The floors are of cowdung, renewed weekly; walls of laterite, or, as it is called in Ceylon, cabook, plastered and blue washed within and without, and the roofs of black tiles. The centre being built on a slope, its floor is five feet above the foundation at the west, and twenty inches only at the east end. It is surrounded by a verandah, enclosed in front, and partially on the left side, by cabook walls, ten feet eight wide, including their breadth. This ward is for eighteen patients. The right wing has a verandah, walled in on the outer or south-west, and open on the inner side. The enclosed verandah has two doors, eleven windows, and at one end a small ward. The inner verandah is raised five feet above the level of the court, and is railed in. Its large ward has two doors, sixteen windows, and sixteen oblong grated ventilators. It is 133 feet long, and intended for twenty-two patients. The glass of the verandah windows is painted green. Behind the end verandah is a washing house, for personal ablution, 14½ by 7 feet in size, with four groups of ventilation holes instead of windows in the walls. The left wing is two storeys high; its ground floor, on the inner side, one; on the outer, four feet above the level of the court. It has verandahs before and behind, supported by massy piers, three feet broad, twenty-two inches thick, with arched doorways, five feet eleven inches wide, betwixt them. There is a central passage through this wing on the ground floor. In the corners of the verandahs are two staircases, a bath, and a straw-room. On the ground floor are a ward for prisoner and itch patients,—the steward's and medical stores, —a surgery and apprentices' room.

The upper floor is a ward for forty-two patients, of the same construction and dimensions as in the right wing. Its floor and that of the verandahs is boarded. The inner verandah, open to the south-east, is enclosed by a wall with glazed windows, painted green, and no shutters. The back verandah is supported by square columns, and enclosed by a perforated wall, five feet three inches high. But to enjoy the view, which, from this side of the hospital, is very good, the patient must stand on tiptoe. At one end of this verandah is a small ward, fourteen feet ten inches by nine feet two inches in size. The large central ward and enclosed verandahs accommodate 102 patients.

Women's.—The women's hospital is behind the right wing of the men's, and communicates with it by a gateway, through a partition wall. Like the men's, it is surrounded by a high wall, leaving ample space for exercise within it. The hospital, placed in the middle of the area, which is overgrown with grass, consists of one ward, 39 feet 10 by 21 feet 10 inches in size, paved with clay and cowdung, with two doors, eight windows, and four square ventilators. It is surrounded by a verandah, enclosed by a wall on both sides. The assistant nurse's room is in one corner of the verandah. There is a detached kitchen and privy, the latter provided with a covered passage. The matron has a separate house in the compound.

ROAD FROM BOMBAY TO POONA.

In travelling from Bombay to Kirkee and Poona, the first twenty miles are by water, across an arm of the sea, up a small river to Panwell, a considerable straggling village, a few miles inland, to which the tide ascends. On their first arrival in the command, Queen's troops are generally transhipped to steamers, in detachments, and carried to Panwell, whence they march to Poona in seven days, including one day's halt.

Staging Pendals.—Within the last twelve months, six staging pendals have been erected along the road, at distances of from seven to thirteen miles, for the accommodation of 200 men. These are substantial stone buildings, roofed with tile, and paved with clay and cowdung, in the form of three sides of a square, enclosing an open space, eighty-one feet by sixty-six in size, with a parapet wall and gateway in front, or on the fourth side. The outer wall is nine feet five inches; the inner, four feet; the ridge pole, thirteen feet six inches high. Betwixt the inner wall and roof, to the height of three feet and a-half, the building is open all round, and the outer wall is pierced by small square ventilation holes, bent in their course through it, to break the force of the wind. The centre and each side are ninety-seven feet long, and fourteen feet wide, giving every man seven feet by two feet seven and a-half inches; and although this accommodation would be altogether inadequate in a barrack-room, it appears to be quite sufficient for health, if not for comfort, in open, well-ventilated sheds, required to be left clean by the last occupants, and engaged for about eighteen hours only by the same party. These pendals are a vast improvement on the tents used formerly on this, and still on other less frequented routes in the command. A portion of each side apartment is partitioned off for the accommodation of women and children; but it is only available to them when the detachment is small: they must either go before or follow when this is 200 strong. Neither cooking-sheds nor privies are yet provided; but the addition of the former has been recently sanctioned by Government.

[Since this was written, a cooking-shed and six raised stone foundations, for the tents of commissioned officers, have been added to every staging pendal on the Poona road.]

The sites selected are generally well supplied with water, &c., and too distant (generally about two miles) from the more populous villages to be likely to tempt the soldier, fatigued with his early march, to seek in them gratifications prejudicial to health. Larger pendals, capable of accommodating the wing of a regiment, were recommended by the late Inspector-General Loinsworth, in May 1840, to be erected on the very spots now selected, with one exception. The ascent of the Bhore Ghaut, an irregular and steep mountain pass, five miles and a-half in length, on the second day from Panwell, is generally very trying to weakly men, some of whom often require to be brought from it in carts or palanquins, to Kandalla, where the day's halt occurs.

At Panwell, the country is little above the level of the sea, and the soil alluvial, presenting, at low water, an extensive surface of slime and mud.

From Panwell, through the Coucan, to the foot of the Ghauts, a distance of twenty-four miles, the road is good, there are several stone bridges over the rivers, and the scenery is varied and beautiful. That of the Ghauts themselves is magnificent, and, on attaining the summit, we no longer experience the hot enervating atmosphere of the Coucan.

Karlee Rock Temples.—A little beyond Kandalla, the country becomes again level, and, at the distance of seven miles, are the Budhist rock temples of Karlee, which well repay the fatigue of a ride and walk to them; for you can go part of the way only on horseback from the travellers' bungalow. From Poonowla, within eleven miles of Poona, there is a marked increase of population, cultivation, and other indications of the approach of a large town. Basalt appears, soon after leaving Panwell, in some places naked, in others covered with a thin argillaceous stratum, mixed with fragments of the rock. The road is, in general, very good; and at intervals of about twelve miles are travellers' bungalows, built by Government, where rest and refreshments may be procured at a very moderate price.

KIRKEE.

a. Station.—KIRKEE is the only station in the Presidency provided with permanent accommodation for a regiment of European cavalry.* It covers an area of some four square miles, and is well defined by the river Moula, which, meeting an obstacle to its direct south-easterly course, in a spur from the Western Ghauts, takes a northerly course for three miles, till, meeting the extremity of a low ridge, it is enabled, after a short easterly run, to resume its southing. The sloping sides of this ridge are enclosed within the deep sweep of the river; on its extremity is the village of Kirkee, and near it, on a lower part of the ridge, the military cantonments. These lie E.S.E. from Bombay, about two miles and a-half to the north of the city of Poona, with the river Moota interposed half a mile below the city, which is close on its right bank; the river is crossed by the Sungum Bridge, immediately before its junction with the Moula.

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* This account of Kirkee is taken chiefly from a "Medico-Historical Abstract of the first year's service, in the East Indies, of Her Majesty's 14th Light Dragoons, by J. W. Moffat, Esq.," then surgeon of that corps, which appeared in the Transactions of the Medical and Physical Society of Bombay, vol. v. 1842.

The station is almost entirely dependent on the river and the monsoon rains for water. Six or seven wells have been dug through the solid rock, in different parts of the cantonment, and the springs have been reached, about the depth of twenty-six or thirty feet. They afford a scanty supply, even with the surcharge of water received from the monsoon rains, and occasional showers; and, generally, before the hot dry season has passed, they are nearly exhausted. The water, however, is of a pure hard quality, after depositing a moderate earthy sediment; it would require a depth of seventy feet to be reached, to secure any steady supply. But the river prevents any absolute want of water, being in some places under a mile, nowhere above two miles distant. It is here between twenty and thirty yards in width, and two feet in depth, running sluggishly over a gravelly or rocky, but in many places a rich muddy bottom. During the monsoon rains, it rises from twelve to twenty feet, and forms a strong, rapid, heavy current, of muddy water. Fish, as trout, murrell, eels, are often caught in it, and have been found wholesome. Delicious water-melons grow along its sides.

The cantonment is much exposed. The winds and seasons are here the same as throughout the Deccan. The hot, parching, northerly winds of April and May are felt very severely, and the glare and heat then, from the light bare soil, are most intense. Luckily, it is not entirely beyond the influence of the alternate sea breeze in the afternoon, which, although frequently slight, and then lessened or interrupted by the higher land to the west, is generally sufficient to give us fresh cool evenings. Kirkee has a bleak dreary aspect during the prevalence of the south-west monsoon; from the violence of which, however, it is most protected.

The district does not bear a good reputation for health, the water is not esteemed, the climate is considered cold, the bazaar not well supplied. The average term of life amongst natives is estimated at thirty-five years. There seems no particular endemial disease; but remittent fever and agues are very prevalent, and easily excited by exposure to an easterly wind, or after any excess of fatigue. The prevalent sickness is from improper nourishment, and want of protection from a variable climate; hence glandular disease is obstinate and common; rheumatism prevails, and many cases of idiotcy may here be met with. Epidemic disease, when it appears, makes dreadful ravages, visitations of cholera or of small-pox only ceasing with the failure of victims.

b. Barracks.—The barracks, &c. were erected in 1826 and 1827, and taken possession of in June 1827. They are built in six parallel lines of pendals, or barrack rooms, from E.N.E. to W.S.W., with the front to N.N.W. The front line is appropriated for the eight troop serjeant-majors' quarters. The four centre lines contain four barrack rooms or pendals: in each and in the rear line are placed the quarter-master's stores, the schoolroom, the serjeant-major's quarters, the canteen, two cooking houses, and the regimental artificers' shop. They are constructed of half-burned bricks with chunam, thatched over with straw and leaves, and have a flooring of well-cemented gravelly clay. They have an airy appearance, and are found to be dry. Each line of building is separated by a street 190 feet broad; and the rooms, in the same line, are distant from each other 116 feet. The rooms in the different lines are not placed directly in the rear of each other, but chequer ways. The barrack rooms consist of a single storey, the floors of which are raised about two feet above the ground, have a tiled verandah on the rear and left or western gable, seven feet in breadth, with a portion at the angle built up, for keeping water, and for the purposes of personal ablution. Each room is 109½ feet long, 11 feet of which, at the eastern end, is partitioned off, and subdivided for two non-commissioned officers; 23½ feet broad and 20 feet high to the centre ridge of the roof, or 11½ feet by the side wall, with four doors and 20 windows, placed opposite to each other. The windows are raised 2½ feet above the floor, and are 5 feet by 3 feet in size, filled with wooden boards, which are divided into three unequal parts, the upper part of which opens upwards and outwards, the two lower inwards. Three chimney-like Venetianed ventilators are placed on the ridge of the roof.

The barracks are calculated to accomodate a regiment 700 strong, each room being capable of containing, with ease and comfort, 38 men and 2 non-commissioned officers, each of whom has thus a space of 61 [*] superficial, 960 [†] cubic feet.

There are two privies, one on each flank, large and commodious, placed at the distance of 150 feet, and, from the excrement being received in baskets, and removed every morning, any unpleasant smell rarely extends far, and is generally prevented. Reservoirs for the urine have been dug at a little distance from the S.W. angle of each barrack-room, which has a walled shelter attached. These reservoirs are covered, and of such a size as to obviate the necessity of emptying them for six months, although opened and cleared out every day.

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[*] 109·5 — 11 = 98·5 × 23·5 = 2314·75 ÷ 38 = 60·90.

[†] 2314·75 × 11·5 = 6619·625 × (8·5 ÷ 2 =) 4·25 × 2314·75 = 9837·6375 = 262 ÷ 38 = 960.

About one hundred yards distance, on each flank, a street of stone, mud, and thatched huts is built, to the number of twenty or thereabouts, with a distinct privy for the accommodation of married soldiers, none of whom, excepting serjeants occupying the partitioned ends of the pendals, are mixed with the single men in barracks.

There is a considerable extent of clear space arround the barracks in front, to the extent of 100 yards, used as a private parade ground, for forming and inspecting the troops, and in the midst of which is the main-guard-room, and beyond this the horses are picqueted. In the rear there is a wider space, of about 150 yards, between them and the line of officers' bungalows, which is used as a foot drill ground, and in which the rear-guard-room is situated. On the southern slope of the ridge, extending to the river, are the large and sterile lawns or compounds of the officers; and the extensive open plain, on both sides, affords ample ground for field exercises and riding instructions. About 100 yards to the right of the barracks, situated at the extremity of the open space in front, in an airy dry situation, are twelve square buildings of brick and tiles, in three lines, each ten feet square, which are the cells for the solitary confinement of prisoners. They have a door, and are ventilated by oblique barred openings, in the upper and lower parts of the walls.

c. Hospital.—At a distance of from 200 to 700 yards, to the left or westward of the barracks, a little in advance of their front line, upon a more elevated spot, and with an open approach, the hospital stands. This building is of later erection than the barracks. It was finished in 1830, and first occupied in June of that year. It is a large, irregular, oblong structure, built of burnt brick, cemented with chunam, and tiled, with a flooring of flagstones, raised between two and three feet above the surrounding ground. It has a N.N.W. aspect, and is dry and airy. The wards form three sides of a square, open to the N.N.W., enclosing an area of 91½ feet by 121¾. Each side forms one large ward, except that on the south, which is divided into two, by a passage leading into the surgery. The two side wards are each 90 feet long, 24 feet broad, and 22⅔ feet high in the centre, or 16 feet high by the side wall, with two doors 8 feet by 4½ feet, and fourteen windows 6½ feet by 3½ feet, placed 8½ feet above the floor, and three chimney-like ventilators on the ridge of the roof. Each is capable of containing 38 patients, at the rate of 57[*] superficial and 1097[†] cubic feet.

The doors are of teakwood, and the windows of glass, painted green, which open inwards; such a spacious ward, with nothing to obstruct the circulation of air, and furnished simply with light iron beadsteads and plain teapoys, contains conveniently thirty-eight patients. The southward side is divided into two wards of smaller dimensions, of fifty-six feet long each, but corresponding in width and height, with two doors and eight windows, one of which in the south wall is very large, six and a-half feet by seven feet, and each capable of containing twenty-three patients, at the rate of 61[‡] superficial, 1174[§] cubic feet; that is, 122 patients for the whole hospital.

These wards have a verandah in front, nine feet in breadth, defended at its outer edge by a wall, two feet and five-sixths in height, from which issue several wooden posts for the roof. The verandah of the side wards is extended backwards to an after area, formed by the various office houses of the hospital, affording a walk of upwards of sixty yards.

This after area is 121¾ by 24 feet, and has, on its north side, the surgery eight by twenty feet, and two other rooms for the medical stores, and an office; also, at each extremity, opening from the side verandah, a small ward with one door and window, for the accommodation of any particular cases requiring solitude or separation: opposite are the stewards' store-room and the apprentices' room and the cooking house, and jutting out from the corners of this line, and at the termination of the side verandahs, the privies are placed, each twenty feet by ten. Contiguous to the stewards' store-room, but opening from the outside, without the gate of the after area, is a room for the reception and examination of dead bodies, twenty by ten feet in size; and, at the distance of 210 feet, quite detached, is a small building, used as a female hospital, containing a room thirty feet long, eighteen broad, and fourteen high, with two doors and four windows, capable of accommodating ten women, with 54[‖] superficial, 756[¶] cubic feet each, and two verandah rooms in the south, twelve by eight feet, for the nurse, and midwifery cases, with small adjacent but detached cook house and privy.

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[*] $90 \times 24 = 2160 \div 38 = 57.$

[†] $2160 \times 16 = 34560 \times (6{\cdot}6 \div 2)\ 3{\cdot}3 \times 2160 = 7129{\cdot}1 = 4689 \div 38 = 1097.$

[‡] $56 \times 24 = 1404 \div 23 = 61.$

[§] $1404 \times 16 = 22464 \times (6{\cdot}6 \div 2)\ 3{\cdot}3 \times 1404 = 4633 = 27097 \div 23 = 1174.$

[‖] $30 \times 18 = 540 \div 10 = 54,$

[¶] $540 \times 14 = 7560 \div 756.$

Two bungalows have been built, one at each side, east and west of the hospital, at the distance of nearly 100 yards, for the accommodation of the apothecary and steward; and, at the distance of nine feet in front of the side wards, are the detached houses or rooms for the hospital-serjeant and the hospital guard. A considerable space of ground around the hospital is enclosed by a prickly-pear hedge, for greater seclusion and protection, and which is kept clean and free from all rank or decaying vegetation.

Public water carriers are employed to bring fresh daily supplies of clear water, for drinking and ablution. One side of the washing room has two tiers of shelves, of solid masonry, for supporting the globular earthen vessels which contain the water, and on the other side is placed an open mouthed barrel, with a tub or two for water, for general purposes. A trough provided with a stopcock, to allow the easy escape of dirty water, and capacious enough to permit three or four men, at the same time, to wash their hands, &c., is fitted up at a convenient height.

POONA.

a. Station.—POONA is in N. latitude 18° 30′, E. longitude 73° 56′, 90 miles E.S.E. of Bombay, 60 miles from the sea, and 1500 to 1800 feet above its level. The cantonments are about two and a-half miles, in a direct line to the south-east of Kirkee, but five miles by the high road, accross the Sungum bridge, with the "Moola" and "Moota Moola" rivers interposed betwixt them. Taking as their boundary the "Moota" river on the north, the Parsee tombs on the south, a rivulet which falls into the "Moota" on the east, and the city of Poona on the west, they cover an area of about nine square miles. The site is nearly surrounded by hills and mountains, of which the more remote are several thousand feet high, the nearer as many hundreds, forming a plain with a raised centre and slightly-sloping sides, of about thirty miles in circumference. The soil, excepting where alluvial near the surface, is seldom more than a few inches deep, and often gravelly, consisting almost entirely of decomposed basalt rock, with a mixture of iron ore, resting on basalt, with steatite and calcareous spar frequently imbedded. Pieces of quartz, of various colours, are scattered over the surface, and, in quarrying and digging wells, fine specimens of crystallized quartz and of zeolite are found. The basalt is of various degrees of hardness; some of it is easily wrought, takes a good polish, and is well adapted for building or sculpture. Where the soil is abundant, and of good quality, or has been made so, a great variety of fruits and flowers of excellent quality and fragrance, tropical as well as European, may be raised. Here, with a little care, may be grown peas, carrots, cauliflower, and other products of the English kitchen garden, with peaches, grapes, oranges, figs, citrons, and other fruits of a more tropical climate. Hedges of myrtle and jessamine are in every compound, with numerous beautiful creepers, of which the passion flower is a very good example. Indeed, the flowers, for variety and beauty, are not to be surpassed.

The climate is that of a country which extends from the limits of Mysore on the south, to the mountains which bound Candeish on the north, being about 7½ degrees in latitude. It has the hilly and woody country which skirts the Ghauts on the west, open naked plains on the east, and enjoys the advantages of both, without the inconvenience of either. The rains are moderate, the quantity being about 25 inches annually, of which 20 fall during the monsoon months. The cold in the winter is pleasant, without being harsh, and the hot season is tempered by regular breezes in the afternoon, from the west, which always ensure cold nights, denied to the country further on the peninsula. The rainy season begins about the middle, or towards the end of June, and closes about the end of October. It is marked by showers, from the west, or southward of west, an almost constant breeze from the same quarter, and cloudy sky, the clouds travelling eastward. There is often a considerable interval betwixt drizzling showers; at other times heavier rains follow in close succession, and last for days together. This season is always preceded, at uncertain intervals, often as early as the end of April, by cloudy weather and violent thunder storms, especially from the east, and especially in the evening. The peals of thunder are sometimes tremendous, the lightning is vivid and frequently destructive, and the rain, accompanied by gusts of wind, falls for an hour or two in twenty-four; hailstones also of a large size occasionally fall. The natives all regard these storms as accidental, and forming no part of the rainy season, and never begin to sow their grain until the astrologer announces that they may do so with safety. July is commonly the wettest month; the rivers attain their greatest height; the sun is obscured; and the air cool and particularly pleasant all day. The thermometer averages from 73° to 74° at sunrise, and 79° to 80° at 3 P.M; but is often as low as 72° all day. In August the intervals betwixt the showers are long, and there are generally some days entirely fair. The sun occasionally breaks through the clouds, and is hot and scorching. The thermometer averages, at sunrise, about 70°, at 3 P.M. 76°. The rains are again heavy for part of September, the rivers are as often full as in July, and the roads are deep. Towards the end of the month, and during October, the showers become less frequent, but are often very heavy, and in October preceded by thunder. The air, during this period, is muggy, as it also is at the same time in Bombay, and seems to lose its elasticity; the nights are particularly hot and close, and Europeans generally complain of oppression and langour. In October the thermometer averages about 68° at sunrise, and about 79° at 3 P.M. Excepting short lulls in the morning, and betwixt showers, towards the end of the rains, the wind blows with great constancy from the west and south-west. The cold weather does not set in actually till near the middle of November, and is always preceded by heavy dews at night, and occasionally thick fogs in the morning. December, January, and February are all cool and pleasant months. The weather is however by no means uniform, but seems to alternate with the changes of the moon, one fortnight being very cold, the sky clear, with a dry harsh wind, the thermometer about sunrise at 54°, the lowest about 38° to 40°, and at 3 P.M. about 73°. The wind comes from the eastward during the cold months, chops the lips, makes the skin rough, and is uncomfortable to the feelings of some people, but is bracing and wholesome; showers of rain fall in that month, especially about Christmas.

The natives date the commencement of the hot season from the new moon, that takes place about the end of February. All March the mornings are generally cool, soft, and pleasant, till 7 or 8 o'clock. The early part of the day is calm. A hot wind sometimes sets in from the northward about 1 to 2 P.M., to be succeeded in the evening by a refreshing breeze from the westward, that blows till near midnight. The thermometer at 8 P.M. stands from 80° to 90°, and at sunrise from 55° to 65°. Storms of thunder, rain, and sometimes hail, are not unfrequent at the equinox. April is perhaps the hottest month in the year. The air, however, keeps dry, elastic, and is never oppressive to the feelings. The hot land winds, from the north and north-west, blow pretty constantly during the day; the cool evening breeze, from the west, is as regular. A wind occasionally sets in for a few days at a time during the hot months, from the southward, which is invariably cool, rather moist, and particularly pleasant. This may be accounted for, probably, from its blowing in the first instance over a great extent of sea, and afterwards over a woody and mountainous track of country, that is not likely to rob it of much of its cold and moisture. The average state of the thermometer at 3 P.M. in the shade is about 90° (in the open air 108°), and at sunrise about 68°. Thunder storms are common during this month.

The weather in May is irregular. If the south winds prevail, and the thunder storms are sufficiently frequent and heavy to soak the ground, it is generally pleasant. If otherwise, the air is often hot and oppressive, particularly at nights, which now have not the sea breeze with any regularity. The thermometer stands this month much higher in the morning and at night than in

April, being frequently 73° or 74° at sunrise, but it is much the same at mid-day. June is an unpleasant month till the rains have fairly set in. After the thunder storms, which occasionally cease about the end of May, strong winds, amounting to a gale, set in from the westward, and blow constantly, from 9 to 10 o'clock in the forenoon, till 8 or 9 in the evening. The natives have a notion that the rains are more or less abundant according to the violence or continuance of this wind, and probably not without foundation, as it is constantly wafting the clouds, loaded with moisture, from the sea to the eastward. The thermometer at sunrise this month was about 75°; at 3 P.M., about 82°.

At the close of the rainy season and beginning of the cold weather, the natives are subject to attacks of fever; but these are seldom frequent, generally put on an intermittent type, and may be chiefly owing to vicissitudes of temperature, which begin to take place betwixt the cold mornings and heat of the day. These, however, in the form of a tertian or quartan, occasionally defy all their remedies, and terminate in enlargement of the liver and spleen, followed by dropsy. At the commencement of, and during the rainy season, the prevailing complaints are those of the bowels, which are much dreaded, and seem to arise from insufficient clothing, and the abuse of green pot herbs and fruits; at this time old people and children are especially the sufferers. Rheumatism occurs frequently, but not more so than might be expected among people so ill clothed and so fond of dabbling in water, in a climate subject to considerable transitions of temperature. The women suffer most from these complaints, owing to a preposterous custom which prevails at childbirth, when they are shut up in a close hole, with light and air carefully excluded, a lamp, and generally a charcoal fire burning in it, the patient being at the same time plied with stimulating food. This occasionally excites fatal fever, and when the poor victim escapes with life, she often labours under incurable rheumatism.

The women are often mothers at too early an age. Their incessant toil, generally out of doors, diminishes and deteriorates the natural food of their infants, and, to keep the little sufferers quiet, they are dosed with opium. Hence not half the offspring of cultivators of the soil are supposed to reach the age of puberty. Enlargement and obstructions of the liver, spleen, and especially of the mesenteric glands, indicated by protuberant abdomen, diarrhœa, and wasting of the limbs, are the diseases which more immediately terminate their existence. Children are subject to the epidemics of Europe. Measles is here, from the milder temperature, a less formidable disease, when treated with due care and attention. Mental alienation is frequent among the natives of Poona, and venereal complaints very common among the lower orders. Oxen, cows, buffaloes, goats, sheep, camels, hogs, horses, ponies, and asses, are the domestic animals of Poona. Beef, mutton, and poultry are of good quality, and moderate in price.

In the Poona cantonments are barracks for two Queen's regiments,—the left flank, occupied by the 83d; and the right flank or Ghorpoorie barracks, occupied by the 64th Regiment.

b. Left Flank Barracks.—The left flank barracks are disposed in four parallel lines running from north to south, facing the east, presenting a front of 1002 and a depth of 312 feet. The first and second lines consist each of eight pendals; the third on each flank, of four. In the centre of, and a little beyond this line, are the serjeant-major's and quarter-master serjeant's houses and store-room. The fourth line is formed by the canteen on one flank, the library and schoolroom on the other, and the cook-houses and serjeant-armourer's shop in the centre. They are divided into right and left wings by a cross street eighty feet wide. The width of the streets betwixt the lines is sixty feet, and the interval betwixt two of the same line, twenty-one feet six. The walls are externally of burnt, internally of unburnt brick, cemented with mud and pointed with lime; the roofs are thatched, and the floors of clay and cowdung, raised two feet. Of each barrack, the outside length is 93 feet 8, the breadth 28 feet; their size internally, 88 feet by 24. The walls are 11 feet high, the ridge pole 19 feet 6. Each is intended for forty men, and every man allowed 52¾[*] superficial, and 805[†] cubic feet. In the twenty barrack rooms, therefore, may be accommodated 800 men.

The pendals of different rows are not chequered, but directly behind each other. They have verandahs, on the south and west aspect, only 7 feet 4 broad, 10 feet 6 high next the wall, 7 feet 10 under the eave, with a greatly-too-small apartment for ablution at one end; and an uncovered enclosed urinary, not in the verandah, at the opposite end of the pendals. The water used after ablution passes through the end wall to a covered cesspool close under it; the urine from a raised slightly concave stone which first receives it, to a large open earthen jar. The cesspool, as well as the urine jar, is emptied by natives once or oftener a-day, and their contents carried to some distance; but the urinaries at all times, and the cesspools very often, are highly offensive.

In every pendal are sixteen windows and four doors; the latter 7 feet by 4, and the former 5½ by 3½ feet in size. The windows are unglazed, the shutters in three sashes, one opening upwards and outwards, two laterally and inwards. The bedsteads are formed of three planks, 6 feet 4 long, 2½ wide, and 20 inches high, supported by tressels; the articles of bedding are, a hair paillas, a hair pillow, with two covers, a pair of blankets, two cotton shirts, and a rug. There are tables and benches for messing in the middle of the room. Betwixt the third and fourth ranges of pendals, on each flank, is one privy for men, and another for women. The soil is carried from them early every morning to a neighbouring ravine, and much attention paid to their cleanliness; yet their exhalations are sometimes very offensive, more particularly in the beginning of the wet season.

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[*] 88 × 24 = 2112 ÷ 40 = 52·8.

[†] 2112 × 11 = 23232 × (8 feet 6 ÷ 2 =) 4 feet 3 × 2112 = 8968 = 32200 ÷ 40 = 805.

In the rear of the flanks are the patcheries, two pieces of ground, 300 feet square, covered with huts, for married men and their families. The detached quarters add much to the respectability and comfort of the married men; but they sometimes furnish occasion for indulgence in spirituous liquors, surreptitiously brought by the women from the bazaars.

A row of stately trees, 125 feet distant, shelters the front barracks and the quarter guard-house, on their left flank, from the oblique rays of the rising sun. About 600 paces to the south-west of this flank are the prison cells, twelve in number, detached from each other, and arranged in two parallel lines, on a rocky mound, some feet above the level of the barracks, a guard-house, and the provost-serjeant's quarters being betwixt them at one end, the privy a little to the left of their middle, and two brick sentry boxes betwixt them. They are distant from each other, in the same line, 27, and in the two lines, 55 feet. The walls are of brick and lime, two feet thick, and chuppered, that is, protected, excepting on the door side, by double screens of grass in bamboo frames, stretching from top to bottom. Every cell is 9 feet 11 inches square, 12 feet 4 high, has a chunam floor, 18 inches above the foundation, and a horizontal ceiling of timber, perforated by a grated ventilator, 15 inches square, from which the heated air passes to numerous small apertures in the walls under the roof. There are eight ventilation holes, 6 inches square, in the walls, on the level of the floor; a fourth, about a foot in size, well up, and a large double door, the inner half composed of perpendicular open iron bars. Near the cells a new serjeant-armourer's shop has been lately built, and in a hollow on the opposite side is a Roman Catholic chapel for the men.

c. Left Flank Hospital.—The hospital stands on higher ground than the barracks, on their rear, and south-east, at the distance of 462 yards, with the compounds and bungalows of the officers betwixt them; the prison cells about 100 yards to the left. It consists of a centre and two wings, which, with verandahs prolonged behind, enclose two gravelled areas, one opening to the N.N.W. in front, 122 feet square, another opening behind of the same length, but 34 feet broad only; the hospital-serjeant's quarters and a guard house, with a gateway between them, and side walls from the front of the area. The centre is divided by a passage to the surgery, into two wards, and has a front verandah, shut in below by a wall three feet high; and a rear verandah, enclosed to form five apartments, three in the centre for the surgery, writing office, and apprentices' room, two at the ends for clothing stores, with two intermediate portions of the verandah open. Each wing has an open outer verandah over its back windows, and two inner verandahs, one enclosed, the other open. All the inner verandahs are 9 feet broad, and the hospital floor is raised 2 feet above the front area, and paved with flagstones. The outer verandahs are 6½ feet wide, on the level of the area, and both covered with gravel over the subjacent rock. The walls are of brick and lime, 2 feet 2 inches thick, the roof double-tiled, with bamboo sheathing underneath. The wards are 24 feet wide, 17 feet 9 high at the sides, 24 feet at the ridge pole. The central are 55 feet 6 long, have two doors and six windows, with a ventilator in the roof, and one in the intermediate passage, and furnish accommodation for 23 patients, at the rate of 58[*] square, and 1148[†] cubic feet per man. Each wing is a single ward, and gives accommodation for 50 men, at the rate of 57[‡] superficial, and 1138[§] cubic feet; the distance between two rows of beds, on different sides, being 11 feet 4, and the average breadth for every bed in the smaller wards, 4 feet 10; in the larger, 4 feet 9⅓ inches.

The bedsteads are of iron, with iron splint, elastic bottoms, and some provided with an apparatus for raising the head and shoulders. The four wards will accommodate 146 men, including orderlies.

The enclosed side verandah of the wings is prolonged backwards, to form the end verandah of the centre, and covered ways to two privies on the extreme flanks of the back court. It also forms an open verandah, on each side, for the water and ablution of the patients, on the rear side of the back court. Connected together, by a wall and gateway, are the cooking-house on the left,—a medical and a clothing store, on the right. Behind the kitchen, on the opposite side of the back wall, is a very good dead-house.

Sixty paces behind the hospital for the men is another for the treatment of sick women and children. It consists of two principal rooms, having an open verandah in front of each, twenty feet by eighteen in size, with a small closet attached. Two smaller additional apartments, with a lobby betwixt them, and a matron and assistant-matron's rooms, have been formed by enclosing the back and part of the side verandahs. The female hospital may conveniently accommodate fourteen patients, giving each a space of sixty square feet.

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[*] $55{\cdot}6 \times 24 = 1332 \div 23 = 58.$

[†] $1332 \times 17{\cdot}75 = 23643 + (1332 \times (\frac{6\cdot25}{2} = 3{\cdot}125 - 1{\cdot}042 = 2{\cdot}083 =)$ $2774 = 26417 \div 23 = 1148.$

[‡] $119{\cdot}5 \times 24 = 2868 \div 50 = 57.$

[§] $2868 \times 17{\cdot}75 = 50907 + (2868 \times 2{\cdot}083 =)\ 5974 = 56881 \div 50 = 1138.$

Right Flank or Ghorpoorie Barracks.—The right flank or Ghorpoorie are a mile and a-half to the north-east of the left flank barracks, the lines of the horse artillery, officers and men, being interposed betwixt them. They are twenty-four in number, twelve of which, with all the accessary buildings, were completed in 1846, and so much resemble those of the left flank, that a separate description of them may be dispensed with. The remaining twelve have been completed this year only, and are infinitely superior to the former in size, construction, and comfort. Unlike the left flank barracks, the newer as well as the more ancient, at Ghorpoorie, have the lines into which they are distributed chequered, the pendals of the second line being behind the interval that separates two of the first, and so on: and this requires a greater interval betwixt the pendals of every line, and improves the ventilation of the whole. The pendals, independently of the attached buildings, occupy four lines, there being five in the front, seven in the third, and six in the second and fourth lines. The new and improved barracks constitute the first and second, and contribute one pendal to the third line. Every pendal covers a surface of 154 feet 8 inches, by 53 feet 9 inches; the distance betwixt two of the same line is 122 feet, and the interval betwixt two lines 69 feet. The foundation and plinth are of rough stone and lime; the walls of burnt brick, two feet two inches thick, plastered within, and pointed with lime outside; the floors are paved with cut stone, and one foot higher than the verandahs, which are from one to two feet above the surrounding level; the roofs are double tiled. Every pendal is divided into one principal, and four small rooms, two at each end. The principal room is 100 by 24 feet in length and breadth, the side walls 19 feet, the ridge pole 25 feet high. The partitions, separating the small rooms, are 17½ feet high. A verandah, twelve feet broad and ten feet high in front, surrounds the building, excepting at the four corners, which are occupied, on each side, by a washing-house at one end, a urinary at the other, leaving the length of the verandah, in front and rear, 127 feet, and, at the ends, 26 feet. The back verandah, facing north-east, is quite open; the front verandah, facing south-west, is enclosed by a wall, two feet two inches high, above which, in its whole length, with exception of two doorways, are, first, a tier of windows, consisting alternately of glazed sashes and moveable Venetian shutters, the former opening outwardly;

second, a tier of immoveable panes of glass; and, last, immediately under the verandah roof, a tier of moveable Venetians, fifteen inches high. This apparatus is interrupted only by two open doorways, nine feet five inches wide, reaching to the roof. The washing-rooms and urinaries are each eleven and a-half feet square. They have one door opening into the verandah, but no windows, the two outer walls being perforated in lieu of them by a large square group of cylindrical holes, originally formed in soft chunam, around tile models, three inches in diameter. One group consists of seven rows, with twenty-two holes in each, and occupies more than half the breadth, and nearly one-third the height, of the wall in which it is placed. In each washing-house is one raised platform of masonry, and another higher, narrower, and occupying one side of the room, for wash-hand basins. There is a slight slope in the floor to the end wall, which is perforated for the passage of the waste water to a covered cess-pool, paved and lined with stone ten feet on the outside. In the urinaries, a raised superficial trough, from which the urine passes through the wall to a similar cesspool, takes the place of the basin-stand. The contents of the cesspools are removed by coolies daily. In each washing-house are two water casks, and five wash-hand tin basins for ablution, with two large earthen jars for water to be drank.

On each side of the large room are two doors and nine windows, with four additional doors opening into the end rooms. The windows are unglazed, but have three shutters, one above opening upwards and outwards, equal in size to the two below, which open laterally and inwards. Five openings, seven inches square, ribbed with iron, pass from each side verandah under the floor, and in the middle of the large room are three, of each small room, one stone, pierced with nine small air holes. In the roof of each pendal are three large covered ventilators, and the side walls are pierced, two feet from their top, by nine double rows of ventilation holes, each about two inches in diameter, opening externally betwixt the main and verandah roofs. This room is 100 feet long, and 24 feet broad, the side walls 19 feet, the ridge poll 25 feet high, and it is appropriated to the use of forty-two men, so that each man has 57[*] superficial and about 1200[†] cubic feet. The four corner rooms will accommodate four more, making forty-six for one, and 552 men for all the new pendals. There are at present twenty beds in each side of the room, with an interval of eleven feet betwixt them, and two at one end; each bed is allowed a breadth of five feet. Betwixt the doors and windows are wooden racks and pegs, for accoutrements, with a double arm rack betwixt every two beds. In addition to these, which are common to the other barracks, are here, suspended from the roof, by iron rods seven feet from the walls, on each side, and seven feet from the floor, the whole length of the room, three iron shelves, one foot eight inches broad, consisting of four flat longitudinal iron splints, about an inch broad, rivetted together and strengthened by cross splints two feet apart. On these shelves, which have a light and elegant appearance, and encroach very little on the respirable atmosphere of the room, the men's knapsacks and more heavy accoutrements are deposited.

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[*] $100 \times 24 = 2400 \div 42 = 57{\cdot}1$.

[‡] $2400 \times 19 = 45600 \times (2400 \times \frac{6}{2} = 3 - 1 = 2) = 4800 = 50400 \div 42 = 1200$.

The older pendals completed in 1846, form the third and fourth lines, six in each. At one end are two serjeants' rooms, at another, in the verandah corner, a place for both ablution and the discharge of urine, eleven feet six inches by six feet two only in size. Length of the principal room ninety-six feet ten, breadth twenty-three feet ten, height of the side wall thirteen, of the ridge pole nineteen feet. Sixteen windows, seven on each side, two in one end, shuttered on the east as well as shuttered on the west side, intended for forty men. Thirty-nine beds in the one more particularly examined. This gives 59[*] square and 890[†] cubic feet to every man. If these twelve pendals, then, accommodate each forty men, the whole will accommodate 480, and the new and old Ghorpoorie barracks 1032 men, besides, probably sixty more in the patcheries, when put in repair. The old pendals are I believe condemned, and so lately as the 30th July, a committee was ordered to assemble, for the purpose of selecting a site for proper barracks for a European regiment of infantry, 1000 strong.

One hundred and sixty paces from the north-east extremity of the third line of pendals are two streets of patcheries, comprising twenty huts each, for the accommodation together of forty married men. The street betwixt them is forty-five feet wide. Each hut has one door, one window, mud walls and floor, fourteen feet by eleven feet nine in size; roof thatched.

In addition to the four lines of pendals, are a fifth line, with two privies at each extremity, and betwixt them the schoolroom, serjeant-armourer's shop and house, a cooking house for each wing, the quarter-master-serjeant's store, the canteen and serjeants' mess room, a sixth line for six staff-serjeants' houses, one of them used as the orderly room, and, on the extreme left, a second patchery, consisting of two rows of alternate buildings, each divided into two rooms, for the accommodation of twenty families, but at present unoccupied, and under repair. There are a left and a right wing guard near the patcheries, on either side, and the quarter guard is near the centre of the front pendals. There are no fewer than 400 soldiers of the 64th Regiment now receiving instruction in reading, writing, and arithmetic, at the regimental school. They are divided into five classes, every class attending for one hour daily. The East India Company very liberally supply European Troops embarking for India, with books for perusal during the voyage. The 64th head quarter division received, for this purpose, 218 separate works, comprising 328 volumes, and were allowed, on its arrival, to retain possession of them as the foundation of a regimental library.

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[*] 96 ft. 10 in. × 23 ft. 10 in. = 2315 ÷ 39 = 59.

[†] 2315 × 13 = 30095 + ($\frac{6}{2}$ = 3 — 1 = 2 × 2315 =) 4630 = 34725 ÷ 39 = 890.

Prison Cells.—Behind the hospital, to the east of the barracks, are twelve prison cells, in three chequered lines, distant in the same line 11, and in different lines 15 paces, raised two feet from the ground, each being inside 10 feet square, 11 feet high at the sides, and 11 feet 7 inches at the ends.

Near these, and near the right flank pendals and patchery, is the regimental bazaar, of one street, with shops on both sides.

Ghorpoorie Hospital.—In general plan and construction, the Ghorpoorie resembles the left flank hospital. Its front area is 157 by 101 feet in length and breadth, and advances 23 feet 10 beyond the wing, by side walls 7 feet high. The back court is of the same length, and 40 feet broad. The two central and two side wards are all of one size, 74 feet 4 long, 24 feet 10 broad, 15 feet 10 at the sides, and about 22 at the ridge poles, the whole being capable of accommodating 120 sick and orderlies, or 30 in each ward, at the rate of 62[*] square, and 1112[†] cubic feet, with nearly 5 feet for the breadth of each bed.

About 250 feet, in an oblique direction from the men's, is the female hospital, of which the principal apartment is 44 feet 9 by 16 feet 9 in length and breadth, and 13 feet 9 high to the canvass ceiling. It has a verandah in front, 66 feet 7 inches long, 8 feet 9 wide, and opens behind into two small rooms, with a lobby betwixt them, formed from the back verandah. There is an apartment, on the outer side of each small room, for the matron and her assistant. In the large room is accommodation for 12 sick, at the rate of 62½ [‡] square, and 859 [§] cubic feet each, and in the small room for two more, making 14 in all.

BOMBAY TO DEESA.

DEESA is 454 miles to the north, and a little to the west of Bombay, 300 by water to Cambay, 151 thence by land. Disappointed in a steamer that had been advertised to leave Bombay for Surat, on the 13th February, I engaged a pattemar to take me direct to Cambay, and, sailing the same evening, got aground at ebb tide, 6 miles from that place; on the 18th, sailed again, late at night, and was carried on shore in a palanquin, two miles through the mud, next morning. Cambay is a convalescent station for men and officers of the Company's service, in medical charge of a remarkably intelligent and well educated native apothecary, and the old British Factory is fitted up as a travellers' bungalow. In three covered bullock carts, with a captain of H.M. 86th Regiment, three servants betwixt us, and an escort of two suwars or outriders, armed with lance, sword, and pistols, but without a particle of ammunition, I left Cambay on the 20th, at half-past 5 P.M., and reached Sejootree, the first halting place, distant twenty miles, at 3 next morning, in nine hours and a half,—two miles an hour being the average rate of bullock speed in this district, where road-making is unknown. The next halting place was Kaira, formerly the station for Queen's cavalry in this Presidency, but so destructive to the health of the 4th Light Dragoons, during four years they were stationed there, that in 1826 it was exchanged for Kirkee. A native corps, now stationed there, is notwithstanding very healthy. At Ahmedabad, the third halting place, I left behind my travelling companion, dismissed my escort, who had not stipulated to travel further, obtained from the civil authorities three new suwars, and, in a single cart, drawn by four instead of two bullocks, resumed my journey, and arrived in Deesa on the 25th. The country through which I passed was in some places ornamented with large and fine trees, and is said to be green, flowery, and fertile in the time of the monsoon, but wore then, throughout, an arid and unproductive appearance.

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[*] 74 " 4 × 24 " 10 = 1863 ÷ 30 = 62.

[†] 1863 × 15 " 10 = 29497 + ($\frac{6''2}{2}$ = 3 " 1 — 1 = 2 " 1 × 1863 =) 3881 = 33378 ÷ 30 = 1112.

[‡] 44 " 9 × 16 " 9 = 750 ÷ 12 = 62½.

[§] 750 × 13 " 9 = 10312 ÷ 12 = 859.

DEESA.

a. Station.—Deesa is in N. latitude 24° 16′, E. longitude 72° 2′, less than 200 feet above the level of the sea, and within fifty miles of it, on the west. The cantonments occupy a plain of a somewhat square form, about six miles in circumference, and are bounded on the north-west by an extensive sandy desert, separating them from Scinde; on the east and north-east, by the provinces of Malwa and Ajmeer, in which are lofty ridges of hills, and among other mountains, Aboo, distinguished for the magnificence, the variety, and the richness of the sculptures of its Jain temples, and lately frequented, in the hot months, as a convalescent station, on the south and west, by the level and fertile plains of Guzerat. Deesa is not many miles to the east of the Runn of Cutch, which is, in the hot season, a dry expanse of salt and mud, but, by the fierce play of the monsoon winds on the waters of the gulf, becomes an inland lake for four or five months of the year, and long before the first rains fall; the intense heat of Deesa, in May and June, is modified, not only by the direct influence of the strong westerly winds which then blow, but by their tendency to fill the Runn with water. The hot, rainy, and cold seasons occupy each, at Deesa, about four months in the year. The hot months extend from the middle of March to the beginning or middle of July, when the rains are fairly set in, and cool the surrounding country. In April the winds are very hot, and veer to N.W. during the day, and back to N. or N.E. at nights, which continue pretty cool throughout. Towards the end of May, they blow westerly or S.W. from the ocean, and consequently lose the dry scorching effect peculiar to winds from the desert. Still the mean heat of the twenty-four hours, during the year, acquires its maximum in May, being, in a table given by Dr Thom, 92°.08, with a range from 79° at sunrise to 109° at 3 P.M. In June the winds are steady from the S.W. and W., and gradually get charged with moisture, which tempers the air, but renders it muggy and oppressive. About the end of this month, or the beginning of July, clouds, thunder, lightning, with occasional heavy falls of rain, usher in the monsoon.

The rains fall regularly at Deesa about four months. During the rest of the year, an occasional thunder cloud may sweep across the cantonment, and pour out a copious shower. The moisture of the atmosphere increases from January, and acquires its greatest degree in July, the thermometrical range of dryness being 19° in the former, and only 8° in the latter. During last year, however, there was much less humidity of the atmosphere during the monsoon than usual.

In the time of the monsoon, the air at Deesa is well charged with vapour, but much less is deposited in the form of rain, and the ground is less moist than at Bombay. The sandy nature of the soil, too, allows rain to filter through it a few hours after it has fallen.

The average annual fall of rain at Deesa is said to be only about fifteen inches, though last year it was sixteen inches and three-tenths, while in Bombay it exceeds 60°.

There are hot winds for a day or two in October and November, but the nights are cool, and the mean heat of the twenty-four hours rapidly declines. The cold season usually commences in November, by the winds veering back from S.W. by N.W. and N. to N.E. In December and January, the nights are often piercingly cold, and, from the dryness of the air, and rapid evaporation from the surface of the body, the feeling of cold is much greater than the thermometer would indicate. At this season, there are occasionally westerly and S.W. winds, which last for a day or two, and are comparatively humid and bland, but their duration is so short, and the transitions so sudden, that they rather cause than avert sickness.

The hottest, and very nearly the dryest months of last year, were April and May, during which the admissions were less than at any equal time of the twelve months. The greatest amount and most severe forms of sickness were met with in June, July, August, September, and October, when the air is more or less charged with aqueous vapour. In June and July, the two most humid, and also very hot months, more than one-fourth of the annual admissions took place, and more than twice as many as during the two preceding months; the increase being from fever, of which 200 cases were admitted. December and January, the coldest and driest months of the year, were remarkable for pulmonic and bronchitic affections, three-fifths of the whole of the yearly admissions for them having occurred in these two months.

In April, May, and the beginning of June, the temperature at mid-day ranges from 90° to 108° in the shade, and in the afternoon it reaches 98°, in the best cooled barracks. At 10 at night, even, the thermometer is often found at 92° and 94° of heat, which, with a still atmosphere, are almost intolerable. The dry and evaporating quality of the air, at such times, alone enables the body to get rid of the superabundant heat.

The site of the European barracks is at the north-east side of the square forming the cantonment, more elevated than the rest of the lines, with a gentle slope towards the bed of the river Bunass on the north-west. The central part of the cantonment is an open esplanade, three-quarters of a mile long, and half a mile broad; in three sides of which the lines of the several corps comprising the force at Deesa are placed, the fourth side being open to the south-east. For several miles beyond the boundary of the cantonment the country is either cultivated or destitute of all vegetation except here and there a loose, scrubby, half-dried bush. The river Bunass is about a mile from its northern border, and approaches the cantonment on the north-west. It is only during July, August, and a few months later, that there is any body of water flowing along this deeply-furrowed channel; and, in the winter and hot season, a few pools of water and a small trickling stream along the sandy bed are the only signs of a river. From the sandy plain, through which the Bunass travels, and the sudden falls of rain filling the hollow, great havoc is often caused in its banks in the space of a few hours; and the appearances left show that a vast volume of water occasionally moves along the bed of the river, in the monsoon.

In Deesa water is found everywhere near the surface; wells are very numerous, and one might be made in every garden: to procure a permanent supply of good water, they are required to be sunk from eighty to ninety feet deep. The temperature of the water at this depth is 86° all the year round. In digging them, soil and sand, with occasionally marine shells from uncertain depth, are the only materials found.

The supply of vegetables for the troops at Deesa is precarious and uncertain, in the dry season; the means of personal ablution at all times very deficient. In June 1848 a local committee recommended that two large covered tanks, fifty feet long, twenty broad, and five deep, should be constructed, as near the European barracks as possible, one for each wing, and supplied with water from two large wells by bullocks kept at work all day long; the water to enter at the bottom, and the excess flow over at the top. On the 13th July Dr Thom writes: "Never was bathing more required than here. We have had no monsoon yet; the few heavy showers that have fallen have rendered the air muggy, and the heat produces the feeling of a steam bath. Yesterday the thermometer was 104° in my verandah, and the dew point 79°." The stillness of the air, loaded with vapour, renders the heat intolerable; and it is only they who live in such a climate that can appreciate the refreshing influence of a cold bath, in allaying for a few hours the fiery heat of the skin. On the 25th March there were only thirty men in hospital from a corps of 1000 strong, and half of them venereal cases. On the 2d May the number was reduced to nineteen, with four convalescents out of hospital. Without any more obvious cause than increased moisture and heat of atmosphere, the sick had increased, on the 13th July, to 110, chiefly of febrile cases; and, though the form was neither very severe nor fatal, from ten to fifteen cases were admitted daily. The bathing tanks are not yet constructed, nor is it known when they may be.* They might supply with water a vegetable and fruit garden, for the use of the Queen's troops, if they were once finished.

b. European Barracks.—The barracks of the 86th Regiment are in two lines, facing the esplanade or parade-ground, and south-west the quarter from whence the winds blow in the monsoon season. Behind these a third row of buildings is formed by the orderly-room, school-room, canteen, cooking-houses, &c., on one flank, and solitary cells and guard-room on the other. Still farther back are the compounds and bungalows of officers, in three rows, parallel to those of the men's quarters. In rear of all, and nearly behind the centre of these last, is the hospital. The barracks and hospital are screened from the violence of the solar heat striking against their western sides, in the afternoon, by rows of fine Neem trees (Melia azadirachta), which are evergreen even in this arid region; and, from the thickness of their foliage, in the hot months they form a shade of some 80 or 100 feet over the front of the buildings, and afford a protection to men on duty passing through the lines.

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* This was written in August 1849. The works and tanks have been since completed.

The buildings are what are called Puckka, that is, constructed with lime and burnt bricks, and covered with two layers of tiles. There are ten barrack-rooms in the two lines; eight of which, with the hospital, were built in 1829-30. They are 177 feet long, twenty-four broad, and have walls fifteen feet high; with six doors and twenty-four windows in each. The doors are ten feet by four, and the windows six feet by four. Each has a good verandah, nine feet broad all round; the ends are partly enclosed as small rooms for non-commissioned officers, and the rear portions of these are made into washing-rooms for the men, of nineteen feet long and eight broad. The other two Puckka barracks were built in 1842, and are each 204 feet long, twenty-four broad, and fifteen feet six inches high; with twenty-eight windows and eight doors, and surrounded by verandahs similar to the others. The doors of these are seven feet by three feet six, and windows five feet by three.

In addition to the ten regular barrack rooms, two temporary constructions of 124 feet long, by twenty-four broad, and thirteen high, have been found necessary to supply ample accommodation for the present strength of a European regiment, in the Bombay Presidency. These were built in 1846, and consist of frame work, with the interstices filled up with bamboos, and plastered over with mud; but being covered with thatch, and surrounded, like the regular buildings, with a good verandah, they are quite as cool as the latter; in fact, being in front of all, and receiving the unbroken force of the S.W. winds, they are preferred by the men to the second line of Puckka rooms. They are ventilated by twenty-two windows, and six doors in each, of the same size as in the two long rooms. The accommodation in these twelve barrack rooms is ample for the regiment. The barracks are supplied with tatties in the hot months, and it is proposed to have punkahs, to be pulled during twelve hours daily, such being much wanted during the still, muggy, and oppressive state of the atmosphere in June, just before the rains begin to fall.

Patcheries.—The patcheries, for married soldiers, are ninety-seven paces to the left of the barracks, and distributed in four parallel lines, with streets thirty-five paces wide betwixt them. In every line are eighteen pendals, seventy-two in all. The pendals are twenty-four feet nine long, twelve feet ten broad, and divided into two rooms, twelve feet ten by ten feet four in size. The walls of brick one foot thick, floors of clay, roofs single tiled.

They have each two doors and three windows. One family resides in every room, or 144 married men in the whole. At the entrance of every room is a small cooking verandah.

Canteen.—Good draught English porter is provided for the different canteens, by the Commissariat department, and sold to the men at three annas or fourpence halfpenny a quart. No man is allowed to drink more than three quarts of porter, or in its place three drams of arrack or of wine, in the twenty-four hours. In the month of January last, the average strength of the non-commissioned officers and privates of the 86th Regiment, out of hospital at Deesa, was 1060, and the consumption in the canteen, serjeants' mess included, was:—

		Price per dram.	
Arrack,	1248 gallons,	1 anna or ½d.	
Brandy,	109 bottles,	2 „	
Rum,	236 „	1¼ „	
Gin,	47 „	1½ „	
Port Wine,	50 „	1¾ „	
Sherry,	43 „	1½ „	
Bottled Porter,	669 „	5 „	per bottle.
„ Beer,	824 „	4 „	„

Draught Porter, 9 hogsheads or 45 gallons, 3 annas per quart.

The price paid for the whole of the articles consumed that month was 4276 rupees, making every man's average monthly canteen expenses 4 rupees 6¼ pice, *i. e.* betwixt threepence halfpenny and fourpence a day.

c. Hospital.—The hospital is built of brick and lime, and consists of a long centre, having a south-western aspect, and two wings projecting behind. A passage through the centre divides it into two equal parts, each containing two large and one small ward, six in all, to which the left wing adds a seventh. The four large wards are fifty-five feet long, twenty-five wide, and fifteen and a-half high in the side walls, the partition between them being two feet lower; and have four doors and eight windows, the former eight feet by four, and the latter six feet by three and a-half, in size. Each window has two pairs of glazed sashes, opening inwards, and moveable Venetian shutters, opening outwards. The smaller end wards are twenty-five feet by twenty-four in size, and have three doors and two windows. In the left back wing is a seventh ward, forty-nine feet long, twelve broad, and fifteen high, with two doors and eight windows. Each of the four large wards has ample accommodation for eighteen, of the smaller for nine, and of the wing ward for nine patients, making 100 in all. In each of the principal wards is a roof ventilator. The verandah, in front and rear, is nine feet wide, and paved with chunam and gravel, a much better material than the red, soft, crumbling, brick flags, which form the floor of the wards themselves. The front verandah, facing the south-west, is enclosed by a wall ten feet high, with window openings and Venetian shutters, corresponding in number and arrangement to the windows of the inner wall. The back verandah is open, above a parapet wall three feet four inches high.

Behind the narrow ward in the left wing, are the surgery, medical, and provision store-rooms, and the cook-house, and, beyond the wing, the apothecary's house, consisting of four apartments, the two smaller taken from the verandah, with corresponding offices. The right wing is formed hy the steward's stores, the hospital-serjeant's room, and the dead-house, and, beyond it, the steward's house.

The privy is a detached building betwixt the wings, joined to the back verandah by a covered passage ninety-six feet long. The wards are supplied with tatties and punkahs for use in the hot and rainy months, and with stoves for the severe cold occasionally experienced in January,—a month in which ice has been seen on the pools of Deesa.

Attached to the back verandah are four small rooms for ablution and the employment of the shower bath. The hospital is supplied with good water from a well in front, worked by two bullocks. It is shaded on every side by Neem trees, and surrounded by a thick hedge, 690 feet in length, and 570 feet in breadth.

The women's hospital is twelve paces to the left of the men's, and has two wards for the accommodation of ten patients, with the back verandah enclosed for two additional sick, and a covered way leading to a privy, twenty paces behind it.

MOUNT ABOO.

MOUNT ABOO, in the province of Ajmeer, is in north latitude 27° 24′, east longitude 23° 25′, and about fifty miles north-east from Deesa. The latest measurement by boiling water makes its height above the level of the sea 4120 feet, and its estimated circumference is forty-five miles. It is surrounded by impenetrable jungle, the habitation of wild animals, and tribes of Bheels equally wild. In April, May, and June the climate is cool and agreeable, while in Deesa it is excessively hot. Hence, in these months, officers who can be spared from duty, with their families, get leave to reside at Aboo. There are twelve native hamlets scattered over it, and the inhabitants are distinguished by the name of Rahtis; about twenty bungalows have, in addition, sprung up within a few years,—fifteen the property of residents in Deesa, five, of political departments of other stations. A detachment of sickly and weakly men, selected from the Queen's regiment at Deesa, has been recently sent thither annually, with a view to their more speedy restoration to health and strength. The access to Mount Aboo is difficult; its base is four days' march from Deesa, and the road thence to the barracks on the top is steep, ragged, impassable excepting by daylight, and requires four hours for its laborious ascent. Weakly men, therefore, cannot accomplish this, but must be carried by four coolies, with two more for a relief, in light vehicles, called by the natives *Indra Vahana*, or celestial cars, which consist of a couple of long bamboo poles, with a small seat, one foot square, suspended betwixt them. The bearers, again, are well aware that they neither are British subjects nor can be compelled to accept employment; and every village holiday or festival is considered by them an excuse for declining employment, or demanding extra and exorbitant hire.

The principal rock of Aboo is said to be gneiss, with very variable proportions of felspar and quartz, being sometimes equally distributed, while in other examples, irregular crystals of rose coloured felspar, a full inch long, are interspersed through the predominating quartz. In different parts, massive veins of blue compact slate may be observed, and in the beds of rivers fragments of marble of various hues and slate of every description. The vegetation is rich and various, combining the flowers and fruits of a European and tropical climate. Besides innumerable other plants may here be seen the bamboo, the golden champa loaded with blossoms, the prickly pear, the brab tree, date, pomegranate, mango, apricot, nectarine,—though to what perfection their fruits attain I have not been informed. The Nuki Talao, a beautiful lake, about 400 yards in length, surrounded by rocks, wooded to the margin, and studded with a few green islets, is one of the first objects that offer us a grateful compensation for the difficulties of the ascent. Of the wonderful Jain temples, I had leisure to visit only those of Dailwarra, comprising the two dedicated to Vrishubdeva and Parswanta'h, the first of which Colonel Todd describes as "beyond controversy the most superb of all the temples of India." To attempt anything like a description of either would be absurd, so innumerable, and so minutely and richly sculptured are the splendid assemblage of shrines, colonnades, niches, groups, and figures, all most elaborately chiselled out in the purest white marble.

Barracks.—The site of the barracks is ill chosen; they occupy a small confined valley, and enjoy neither the agreeable and diversified scenery in their immediate vicinity, nor the refreshing western breeze in the hot season, this being obstructed by a hill called Monte Video, in the front, at the same time that they are exposed to the reflected and radiated heat from the bare rocky sides of another hill on the north-east.

The barracks are two in number, with a western aspect, and an interval of twenty-four paces betwixt them. The walls are of wattle and mud, about four inches thick, whitewashed on both sides; the floor of clay, the roof thatched. The inside dimensions of each are a hundred feet long, twenty-one broad, fourteen high to the top of the wall, about twenty-four to the ridge pole. They have four doors and eighteen windows of split bamboo interwoven in teakwood frames, but no glass; side verandahs, eight feet ten broad, and chuppered ends. In the four corners are serjeants' rooms, eight feet square, taken from the verandahs. The two barracks are intended for one hundred men, but furnish proper accommodation for eighty only, and this gives 52½[*] square, and about 919[†] cubic feet to each. The cooking house and privy are respectively fifty-three and seventy paces behind the barracks.

At some distance behind the barracks, are twenty-five grass huts in two rows, for native followers, each of them eleven feet long, nine feet three broad, six feet six high in the sides, eleven feet six in the centre. They have each one door, but no windows.

Good water is procured in abundance at all seasons, from three springs in the neighbourhood. The west angle of the lake, being the least open to observation, is generally resorted to as a bathing place.

Hospital.—Though near the barracks, the site of the hospital is better selected, being a hillock or rock, a few hundred paces behind them, and about forty feet above their level, which commands a good and picturesque view, including the lake, and is open to the prevailing wind. The hospital consists of two pendals within six paces of each other, forms two sides of a square, facing respectively the south-west and south-east. They have verandahs at the sides and one end. In the contiguous ends, which want verandahs, are two small apartments. Abstracting these, each building forms a single ward, seventy feet long, twenty-two wide, with a ceiling of canvas thirteen feet four inches high. In each ward are four doors and twelve windows. The walls, doors, and window shutters are of the same materials and construction as those of the barracks. The window openings are three feet from the floor, and five feet by three in size. The verandahs are eight feet nine wide. The clay floors are raised two feet. The two end rooms are nineteen feet long, eight feet five inches broad. The two large wards furnish accommodation for forty patients, at the rate of 77[*] square and 1026[†] cubic feet. The latrine is sixteen feet distant from the wards, and the cooking-house nineteen paces behind one of them.

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[*] 100 × 21 = 2100 ÷ 40 = 525.

[†] 2100 × 14 = 29400 + ($\frac{10}{2}$ = 5 ÷ 11½, 3½ × 2100 =) 7350 = 36750 ÷ 40 = 919.

The barracks and hospital were completed in 1848.

KURRACHEE.

a. Station.—KURRACHEE is in north latitude 24° 53′, east longitude 67° 17′, about 450 miles by water, and 770 by land, north and west from Bombay. The town is built on a stratum of tertiary rock, at the head of a shallow creek, three miles from the sea, and twenty or thirty feet above its level. The houses and a surrounding wall are of mud; the streets narrow, dirty, and ill kept; the inhabitants estimated at 12,000. Keeled boats of large size cannot come within a mile and a half of the town. Cargo is landed in flat-bottomed boats, and at high water only; and steamers are prevented from approaching the harbour by a sand bank or bar, which renders the disembarkation of troops tedious and difficult.

The country around Kurrachee has the appearance of a desert. It is bleak, bare, and arid, being scarcely ever moistened by rain, and has no other vegetable covering than here and there a few stunted and sickly shrubs. The flat, sandy, shingly plains consist chiefly of rolled stones cemented into a sort of conglomerate, rising in some places into low hummocks, and are almost entirely without vegetable covering; a few dwarfish and sapless shrubs or pining cacti, thinly scattered over the surface, give the only indications of vegetable life. Low, distant hills, which skirt the horizon, present the same arid, dreary, and barren aspect. Good water is, notwithstanding, to be obtained at the depth of from twenty to twenty-five feet; and by sinking wells, and raising the water by Persian wheels, a very large garden has been made and cultivated at the expense of government, and others by individuals, which furnish most satisfactory evidence of the fertility and capabilities of the soil when properly irrigated. Placed on the western shore of India, just beyond the northern tropic, Kurrachee is exposed to the full influence of both the monsoons that prevail on this coast at different seasons of the year,—the one from the north-east and the other from the south-west, each lasting five months, and divided in May and October by about a month of variable winds or hot and calm weather. The continent of Asia having become colder than the ocean in November, the north-east monsoon, or in fact the trade wind, begins to blow near the Himalaya and Hindoo Coosh mountains, gradually extends to the coast, and thence over the Arabian Sea. It is in full force at Kurrachee in December, January, and February, when the air is exceedingly sharp, clear, and dry, and produces a feeling of elasticity and activity highly conducive to the enjoyment of good health. At this season the dew point is from 20° to 30° below the temperature in the shade; the range betwixt the day and night is very great, equal to 30° or 40°, especially in Upper Scinde; but this variation occurs with great regularity, every twenty-four hours, and those sudden hourly vicissitudes common to some other countries are unknown. As soon as the sun returns from the southern tropic and restores its warmth to the Indian peninsula, the heat of April begins to be tempered by the sea-breeze, which acquires greater strength and permanency, till the middle of May, and then becomes entitled to the name of the south-west monsoon, which blows with great and tempestuous violence along the western coast of India till the beginning of October. The character of this wind is the reverse of the north-east monsoon from the land, being humid, warm, and bland. The climate of Kurrachee is thus rendered more equable; the difference betwixt the heat of the day and night seldom exceeds 10°, while in the opposite season it is never less than 20°, and the dew point is seldom more than 6° or 8° below the ordinary temperature in the shade. The sky is cloudy, and subdues the summer heat of July and August, which is often found to be intolerable. The south-west monsoon has in Scinde one peculiarity; for, while to the south of Cutch it is characterised by the deluges of rain with which it inundates the western shores of India, at Kurrachee there is seldom rain, a shower being only experienced on some rare occasion during the summer. Thus the dark, gloomy curtain of clouds thrown over the country gives protection from the solar rays, without the evils too frequently resulting from immense and long-continued falls of rain, more especially when it lies exposed or is retained by dense vegetation. Though the range of temperature in Scinde be so considerable as from 40° in the cold to 100° in the hot season, and the barometrical condition of the atmosphere in summer and winter varies in proportion,—yet these extreme states take place gradually, and the intervals betwixt the monsoon are marked by much fewer and less sudden vicissitudes of temperature. Kurrachee is liable to constant dust storms, the wind carrying with it clouds of dust, from whatever quarter it may blow.

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[*] 70 × 22 = 1540 ÷ 20 = 77.

[†] 1540 × 13⅓ = 2053 ÷ 20 = 1026.

The absence of vegetation, the dryness of the soil, the insignificant fall of rain, and the nature and duration of the prevailing winds, are all highly favourable to the health of troops; and the character of the climate is shown by the mildness of the febrile attacks, and the trifling mortality resulting from them.

POINT MONORAH.

POINT MONORAH, a high bluff tongue of land on the south-west side of the entrance of Kurrachee harbour, six miles from the cantonment, has been recommended as a convalescent station. The Ameers of Hyderabad erected a fort here, to protect the harbour from pirates, but it is now in ruins. The point is 1376 by from 186 to 400 yards in length and breadth. Its soil is of red gravel, of several feet in depth, resting upon clay, and the slope of the ground does not permit water to lodge and stagnate. There is an excellent beach for sea-bathing, with sufficient space for exercise and for the erection of hot salt water baths; the water is clear, and the bottom of white sand; the sea-breeze from the west, sometimes inclining to north or south, is strong and refreshing, and the thermometer falls about five degrees lower than in the cantonment. The air is pure and pleasantly cool; with cold mornings, evenings, and nights. The great drawback appears to be the want of good water. In 1839 some sick and convalescents of her Majesty's 40th and the Company's 2d Grenadier Regiments were sent to the point; and, though lodged there in common tents, the improvement in their health exceeded the warmest expectations.

THERMAL WELLS.

About seven miles from Kurrachee, in an irregular chain of hills which runs nearly east and west, are thermal wells. The temperature of the principal well is 97° 5′. Some are lower than this, but one is so high as 120°. Uncombined acids, chiefly the muriatic, are found in the water, which is used by the inhabitants both internally and as a bath, and many virtues are attributed to it. An officer of the 8th (King's) Regiment, who laboured under chronic rheumatism with some contraction of the joints, lately gave it a trial, and derived marked benefit from its use. Whether, as the sanguine anticipate, it may be found useful in chronic disorders of the bowels, in syphilitic and cutaneous complaints, remains to be proved.

CLIFTON.

The Clifton of Kurrachee, a few bungalows scattered over a low ridge on the sea coast at two miles' distance, offers to the convalescent, who has the fortune to hire one, an occasional retreat and exemption from the scorching winds to which the cantonment is exposed in the hotter months of the year.

Cantonments.—Two miles to the north of the town, with an intermediate sandy plain exhibiting hardly a vestige of vegetation, appear the cantonments, distributed over a surface of about 4000 yards in diameter. To the north-west of them is the Government garden, covering forty-three acres of ground, carefully cultivated and well kept, until the disturbances in the Punjaub converted into camp followers the commissariat labourers on whom that duty had devolved. Next the garden, to the north-east, is the old bazaar; then follow, in the same direction, lines, now occupied by the 26th Regiment Native Infantry, consisting of forty pendals in four rows, ten in each, on an area of 220 yards per side. For twenty-six of these pendals H. M. 86th Regiment exchanged its tents with the best effect during the awful visitation of cholera in 1846. A little way to the north-west of them are other native lines occupied by the 11th Regiment Native Infantry. 500 yards from the first, on the south-west, are three temporary barracks, and one permanent hospital for a company of artillery. The horse artillery barracks, three in number, of two storeys, hardly yet finished, and superior in construction and accommodation, are at the south extremity of the cantonment, near the harbour.

b. European Infantry Barracks.—A hundred yards to the north-east of the 26th Native Infantry pendals are the European Infantry barracks, lately occupied by H.M. 60th Rifle, and now by the right wing of the 8th (King's) Regiment. Their hospital follows in the same direction, and both together cover a surface of 700 by 300 yards. They occupy an oblong slightly elevated piece of ground, and are disposed in two parallel lines, facing the north-east, five pendals in the first, four in the second. In a third line are six patcheries; and in a fourth, three buildings, containing the canteen, school-room, library, quarter guard, and serjeants' mess-room. The two lines of pendals are divided by a street about fifty yards broad; those of the same line by an interval of thirty feet. The regularity of the rear line is broken by the oblique projection backwards of the two pendals on the right, which have an angle betwixt them open to the south-west. The pendals of the second are opposite the intervals betwixt those of the first lines. Every pendal consists of one principal and eight small rooms, four at each end. The foundation is of stone and lime, the walls and floor of mud; the former, one foot nine inches thick; the roof of timber, mud, and lime. The large room is 152 feet long, 29 feet 10 inches wide, 10 feet high at the sides, and 17 feet 2 inches at the ridge pole. Six of the small rooms are occupied, each by a married serjeant, or by two unmarried men. Every pendal is capable of accommodating 82, and the whole nine 738 men, allowing twelve for the small and seventy for the large rooms, at the rate of 65[*] square and about 780[†] cubic feet per man.[‡] The large rooms have five doors and twenty windows. Folding shutters, opening inside, occupy the two lower thirds of the windows, glazed sashes, opening upwards and outwards, the upper. The small rooms are ten feet three inches square. Two are used as washing rooms. The verandahs are ten feet seven inches wide, and raised eight inches or more from the level of the esplanade. In two of their corners are cooking ranges, for the use of serjeants occupying the end rooms.

The patcheries form a third line, in which there are six, and a seventh detached. They are good comfortable quarters, and were built in 1844. The walls are of stone, the floors of mud. Every building is divided into fifteen rooms, seventeen feet eight inches by thirteen feet five inches in length and breadth, with two doors and two glazed windows, and verandahs in front and rear. Every room is intended for two families; and the whole furnish accommodation for 210 married or 420 single men.

About 1400 yards to the north-north-west of the European Infantry barracks, are the Pendals on the Heights, six in number, in which were formerly quartered three companies of, and which continue to accommodate the depôt of, H.M. 60th Rifle Regiment. These pendals are temporary and in bad repair, on higher ground and farther from the sea than any part of the cantonment. The strength of the depôt, at my inspection, was 89 men, 96 women, and 127 children.

Six hundred yards to the south of the Pendals on the Heights, and 1100 to the east of the European Infantry barracks, are the Lower Pendals or temporary barracks for European infantry, from 1846 to last October occupied by the 1st Regiment of Bombay Fuzileers, and five of them now by the left wing of H.M. 22d Regiment. These buildings are of enormous size, and built of mud. They are divided into one large and four small end rooms, the former being 264 feet long, 24 broad, the wall fourteen feet high, the ridge pole only one foot higher, making the roof, which is of matting and mud, almost flat. They are surrounded by a verandah ten feet wide. The mud walls are fifteen inches thick. In every large room are twenty-two doors and eighteen window openings, filled with flimsy mat frames in place of wood and glass. Five pendals are occupied by the left wing of the 22d Regiment, one as an hospital, and another as quarters for medical subordinates and married soldiers.

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[*] $152 \times 29 \text{ ft. } 10 = 4535 \div 70 = 64{\cdot}8.$

[†] $4535 \times 10 = 45350 + \left(\frac{7 \text{ ft. } 2}{2} = 3 \text{ ft. } 7 - 1 \text{ ft. } 2 = 2 \text{ feet } 5\right) 9269 = 54619 \div 70 = 780.$

[‡] Accurate averages of the *superficial spaces* allowed to soldiers, in barracks and hospitals at different stations, are here calculated from actual measurement, whereas the averages of *cubic spaces* given can only approximate to accuracy, as the length of the ridge pole and the distance of its extremities from the perpendicular of the end walls are not known, and left me only the length and breadth of the floor, and the height of the walls and ridge, to estimate the cubic space above as well as below the walls.

Thirty paces from the hospital, on the south-east, are two small groups of prison cells, three in each, with a surrounding verandah ten feet wide, a double door, the inner being an open frame of iron bars, and a window in each wall, with ventilation fans in the roof.

The cantonment is supplied with water from a chain of wells extending along the dry bed of a water course, near the government garden to the west. It has a slightly brackish taste. Wells dug to the east of the cantonments yield water too brackish to be fit for any use.

c. Hospital.—The hospital is fifty yards to the north-east of the barracks, and consists of three pendals, two a little in front of, and one a little behind, their rear line; the last twenty-two feet distant from the first, and equal in length to the two, which are seventeen feet apart. The walls are of stone and lime, ten feet high inside, the floor of clay and chunam, raised two feet from the ground, the roofs tiled, and the ridge pole twenty-two feet two inches high. The rear building has on each side of a central passage two small and one large room, the dimensions of the former being twenty-nine feet nine by eighteen feet five, and of the latter seventy-two by twenty-nine feet nine inches: one of the small rooms is used as a surgery, one as apprentices' quarters; the others, and the two large, as wards. Thirty patients may be accommodated in each of the two large, and seven in each of the small wards, or seventy-four in the whole pendal, with an allowance in the first of 71[*] square and 957[†] cubic feet, and in the second of 78[‡] square and 1048[§] cubic feet. The two front pendals consist each of one ward, corresponding in breadth and height to those in the rear, and capable of accommodating each thirty-eight patients, at the rate of 69[‖] square and 934[¶] cubic feet. The whole hospital, then, is capable of accommodating 150 men. In the large wards of the pendal are three doors and eight windows, in the small rooms one door and two windows, in the wards of the front pendals four doors . windows. The doors are half glazed, the windows four feet six inches by three feet in size, and two feet seven inches above the floor. The windows have two sashes below, opening laterally and inwards, and one of half the depth, opening upwards and outwards.

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[*] $72 \times 29\frac{3}{4} = 2142 \div 30 = 71.$

[†] $2142 \times 10 = 21420 + (\frac{12 \text{ ft. } 2}{2} = 6 \text{ ft. } 1 - 2 \text{ ft. } 8 = 3 \text{ ft. } 5 \times 2142 =) \; 7318 = 28738 \div 30 = 957.$

[‡] $29\frac{3}{4} \times 18 \text{ ft. } 5 = 547 \div 7 = 78.$

[§] $547 \times 10 = 5470 + (\frac{12 \text{ ft. } 2}{2} = 6 \text{ ft. } 1 - 2 \text{ ft. } 8 = 3 \text{ ft. } 5 \times 547 =) \; 1868 = 7338 \div 7 = 1048.$

[‖] $89 \times 29\frac{3}{4} = 2647 \div 38 = 69.$

[¶] $2647 \times 10 = 26470 + (\frac{12 \text{ ft. } 2}{2} = 6 \text{ ft. } 1 - 2 \text{ ft. } 8 = 3 \text{ ft. } 5 \times 9044 =) \; 35514 \div 38 = 934.$

The wards are surrounded by verandahs ten feet ten inches broad, raised two feet from the ground. Behind and to the east of each pendal, are a kitchen and a latrine, the latter joined by a covered passage, and in the passage from the largest pendal a small bathing room.

The women's hospital is about a hundred paces to the east of the men's, and consists of three apartments, one thirty-one feet ten long, twenty-one feet ten broad, another twenty-one feet ten by eleven feet eleven; the third, eleven feet eleven inches square; the last is occupied by the matron. In the first is room for ten, in the second for four beds. The building is surrounded by a verandah, from which are covered ways to the kitchen on one side, and latrine on the other.

HYDERABAD.

a. Station.—HYDERABAD is situate in latitude 25° 22′ north, and longitude 68° 41′ east, 101 miles or eleven days march, including one of halt, north-east from Kurrachee, and 728 miles *via* Ahmedabad, north-west from Bombay. The road is over heavy sand, with few traces of vegetation for the first or second days' march, but the soil afterwards improves, and near Ghooza, forty-two miles from Kurrachee, it seems rich, and is to some extent cultivated. Troops proceeding on this route, beyond Hyderabad, generally march in six days from Kurrachee to Tatta, sixty-five miles, and thence proceed up the Indus in steamers with flats in tow, which run during daylight only, being fastened to the bank of the river in the night.

The fortress of Hyderabad stands on a rocky hill, the base of which is washed by the Fulalee, a branch of the Indus. The nearest point of this river is three miles south by west of the fort, where is a valley on its eastern bank, from which boats constantly ply to Kotree on the western side, in the route from Kurrachee to Hyderabad. The fort is of an irregular pentagonal figure, adapted to that of the rock on which it stands, and is defended by round towers and a high brick wall, perforated with matchlock loop-holes. There are several mosques within the fort, and on a hill to the south the sumptuous tomb of the founder of the Principality, Ghoolaum Sahib. The town is built of mud, on a lower level, and the streets narrow, dirty, and crowded. The soil in the vicinity, though light and sandy, is very fruitful when properly watered and cultivated.

b. Barracks.—Of ten barracks for European troops at this station, five only are yet completed, but these furnish ample accommodation for the left wing of the 8th (King's) Regiment, which marched from Kurrachee to Hyderabad on the 12th, and arrived on the 23d February last, the strength of non-commissioned officers and men being 497. The barracks are built on a plain, about a mile distant from the town, in two lines of five each, but in the front line is the canteen and quarter-guard in one building, and in the rear line another building for the library, school, and orderly rooms, making six large buildings in each line, or twelve in all. The two lines are divided by a street 140 feet wide, and the barracks of the same line by convenient intervals. They have inner and outer walls in front and rear, of burnt brick and lime, two feet thick, and whitewashed; verandahs all round, floors of brick flags, raised from two to three feet, and double-tiled roofs, supported by the walls. Every barrack covers a space of 220 by 69 feet in length and breadth, and is divided into three very long and eight end rooms; the central and side rooms are 174 feet long, the former 24, the latter 12 feet wide, the outer walls 20, the inner 27, and the ridge pole 33 feet high. The inner side and end walls are pierced by thirty-two arched openings four feet wide and about sixteen high, eight of which reach to the floor and serve for doorways, twenty-four are obstructed by partitions, eleven inches thick, three feet deep, raised one foot above the floor, and serve for windows. There being as yet no racks, pegs, or shelves for arms or accoutrements, the tops of these partitions, with cords and ropes nailed into the walls, are used as temporary substitutes. Betwixt the roof and each of these high passages, for light and air, is a supplementary arched opening through the walls, four feet wide, and about two and a half deep. In each outer wall of the long narrow side rooms are fifteen folding doors opposite to the inner wall openings, eight feet high, three feet wide, each half or valve being divided into two sashes of moveable Venetians, with a pane of glass fixed over them; above each door is another window of four immovable panes, and higher up under the roof are oblong holes, eight inches deep, fitted with fixed Venetian fans, and opening externally above the verandah roofs. The verandah is eight feet eight broad, seven feet four in height at its lower edge, and supported by brick pillars one foot five inches square.

The centre and one of the sides are used as sleeping apartments, the other side room as a mess-room. In the centre room are two, and in the side room is one row of bedsteads, distributed in pairs betwixt every two wall openings; and the intervals betwixt these being sixteen in number on each side, with a breadth of seven feet, sixty-four men are accommodated in the centre, thirty-two in the side room, ninety-six in both,—giving four feet betwixt every pair of cots, and two feet betwixt the two of every pair, with an interval of eleven feet four inches in the centre, and five feet eight inches in the side room. Adding eight serjeants from the end rooms, the number for every barrack will be 104, and for the whole ten, when finished, 1040; on emergency, 320 more, making 1360 in all, might be accommodated, by using as sleeping quarters the rooms now set apart for messing, without taking into account married men in the patcheries. Every man in the centre and side rooms has 65[*] superficial and 1736[†] cubic feet.

The end verandahs are twelve and a-half feet long, eight feet wide, and communicate with the central rooms by a passage, on each side of which are two serjeants' rooms, twenty feet six inches in breadth, by ten feet in the length of the barrack.

Eleven feet behind the middle of each barrack is a washing house, thirty feet long and fifteen feet wide, with a slightly convex brick floor, a channel at each side, sloping from the ends to the centre, where the wall is perforated for the passage of the water. Side verandahs lead to two urinaries, with channels lined with glazed tiles, for the reception and conveyance of the urine to cess-pools on the outside. Behind the wash house, a flight of steps leads to a plunge-bath in the same building, thirteen feet nine inches long, five feet ten inches broad, and three feet ten inches deep. The cesspool and drains, for the reception of the refuse water from these various sources, are neither paved nor covered beyond the building.

The canteen, serjeant's mess-room, and quarter guard are to occupy one building betwixt the third and fourth front barracks, and the library, school, and orderly room, another betwixt the second and third of the rear line; but they are not yet finished.

The cooking houses and latrines are in the rear of all; the former have very convenient cisterns for water in front of them. It is of excellent quality, but requires to be kept in casks or chatties till the mud subsides.

Patcheries.—Two hundred and thirty paces behind the barracks are eight patcheries, in one line, with the quarter-master serjeant's house in the middle, each with fifteen rooms, but two only are yet finished, and they are occupied by thirty married men. They are by far the best I have seen in the command. They are of the same materials as the barracks, each 210 feet long, and 34 feet broad, divided into fifteen rooms, with a double sloping tiled roof. Every room is sixteen feet by twelve; the side wall about fourteen feet, and the ridge pole eighteen feet high. Eight paces behind them, and four and a-half paces apart, are, buildings, one for every two families, consisting of a cook-room in common, two washing houses, and two latrines.

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[*] $174 \times 24 = 4176 \div 64 = 65$.

[†] $4176 \times 27 = 102752 + (\frac{6}{2} = 3 - 1 = 2 \times 4176 =)\ 8352 = 111104 \div 64 = 1736$.

c. Hospital.—The hospital is about 1000 feet to the east by south of the barracks, and has a south-western aspect. The principal buildings extend over a surface of 883 by 390 feet, and consist of a projecting centre, in which are the surgery, medical and clothing stores, and apprentices' rooms; two houses in front of it for the apothecary and steward's; two long side wings, for the accommodation of the sick, eighty feet apart, but joined to the centre by covered passages; beyond, and in front of the last, on the left, a small detached wing forming the women's hospital; and on the right, the kitchen, bathing rooms, &c. of the apothecary and steward. A hundred and ten feet behind the centre of the hospital, are the kitchens, two in number, and beyond and behind the attached wings, at the end of covered ways, eighty-two feet long, are the latrines and urinals, one for each wing. The walls are of burnt brick and lime, plastered and whitewashed; the floor of brick flags, three feet from the ground; the roofs tiled. Each principal wing is 228 feet in length, 78 feet in breadth; the centre, in front of them, 79 by 39 feet 6 inches; and the detached wings, 75½ by 43½ feet. The verandah surrounding the main building is 278 feet long at the sides, 76 feet at the ends, 12 feet wide, 15 feet high internally, 12 feet externally, and supported by brick piers, 17 inches thick, 3½ feet broad. At the outer end of each wing are two small apartments, 12 feet square, with a passage betwixt them into an immense ward, which is 222 feet long, 24 feet wide, and 22 feet high. On each side of this ward is another of the same length, but only 18 feet high, and 12 feet wide.

The centre and side wards communicate by twenty pairs of arched doorways about nine feet high and four wide, and opposite to them, in the centre walls of the side wards, is the same number of folding doors, with upper sashes glazed.

In the right wing, the three large wards have no sub-divisions in the left, the central is divided into three compartments, 104, 76, and 42 feet in length, by partitions which reach to within six feet of the cieling, and in which are left arched passages seven feet and a-half wide, and about nine feet high.

Each of the large central wards would accommodate eighty-eight men, at the rate of 60* superficial and 1513† cubic feet; each of the side wards forty-four men, at the rate of 60‡ superficial and 1089* cubic feet, the whole hospital 352 men. But if the ten barracks were filled, it is not likely the sick would ever exceed 176, the number to be accommodated in the two central wards.

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* 222 × 24 = 5328 ÷ 88 = 60.

† 5328 × 25 = 13320 ÷ 88 = 1513.

‡ 222 × 12 = 2664 ÷ 44 = 60.

One wing of the hospital has been hitherto sufficient for the sick of the 22d Regiment. In want of barrack accommodation, part of the other is now used as an officers' mess-house; and in want of private houses, officers have been obliged to take possession, as quarters, of the female hospital, and of the central apartments, apothecary and stewards' houses. Under the cieling are ventilation holes about eighteen inches long, and four deep, which open on the outside above the verandah roof; and in the corners of the cieling itself are other openings of a triangular shape, fifteen inches on each side.

Betwixt the two kitchens is a water cistern; as for those of the barracks. There is no dead house.

The left detached wing, or women's hospital, consists of three rooms on one line, each fifteen feet ten by fifteen feet six inches in size, the central having a verandah before and behind, the side rooms on three sides. There are three small additional apartments, and a latrine in the four verandah corners.

The barracks and hospital are supplied with water from a Government well, above a mile and a-half from the cantonment. Seven months in the year the wind blows from the east or south-west, five months from north-east or land.

GOVERNMENT GARDEN.

There is a Government garden on the banks of the Indus, three or four miles from Hyderabad, from which the Queen's troops were supplied with vegetables by the commissariat department, at a fixed price, up to 1st April last, since which this supply has been stopped, and the allowance they now receive for two pice a day is very scanty.

ART. III.—*Electro-biology successfully applied to Surgery.* By WILLIAM MARSDEN, M.D., Governor of the College of Physicians and Surgeons of Lower Canada.

[IN giving insertion to the following article, it is scarcely necessary to say, that no opinion is thereby expressed, either as to the merits of the peculiar practice employed, or as to the alleged efficacy of that mode of influencing the animal body, or as to the influence of the agent referred to. For all this, the author, Dr Marsden, must be held accountable. Our duty is limited to the act of placing before the profession the facts as reported by Dr Marsden. Of the correctness of the statement of the facts, and the mode of explanation, we leave readers to exercise their right of judgment.]

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* $2664 \times 18 = 4795 \div 44 = 1089$.

For the Edinburgh Medical and Surgical Journal.

THE following article has been sent to the British American Medical and Physical Journal of Montreal, where it will, in all probability, be published before it reaches you. Finding, however, from the late public journals of Great Britain, that the science of Electro-biology (if we may so call it) so far from having taken root, seems scarcely to be known upon your soil, I will offer no apology for seeking the powerful aid of your columns, in arousing the attention and awakening the inquiries of my professional brethren on your side of the Atlantic, to the marvellous and incomprehensible but all-powerful influences of this new discovery. To use the words of Alfred Smee, F.R.S., in his preface to his "Principles of the Human Mind, deduced from Physical Laws; together with a Lecture on Electro-biology, or the Voltaic Mechanism of Man,"—"I apprehend," says he, "that the time is fast approaching, when no other system of mental science will be acknowledged but that which is based upon physical laws."

I am at present engaged in a series of experiments, under this new agency; to communicate the results of which I may claim your aid at a future time, unless, which is much more likely, some one nearer home should anticipate me, by taking up the subject in earnest. My present experiments are chiefly upon affections of a nervous or purely functional character, as epilepsy, stammering, and similar infirmities; and the results, thus far obtained, have exceeded my most sanguine expectations. But as, in the present state of knowledge on this subject, I should hardly be believed by persons who have had no opportunities of witnessing its almost magical effects, I merely report the following case, hoping it will lead to investigation and experiments, that will be attended by beneficial and satisfactory results.

Having recently had frequent opportunities of witnessing the mysterious, incomprehensible, and inexplicable influences, and almost magical powers of electro-biology, and having learned the mode of its application, I have for some time past been engaged in practising such experiments as I thought would enable me to make a useful application of its influences. Finding that it gave me most unlimited control over the physical as well as mental powers of my subject, the inquiry that forced itself on my mind was, *cui bono?* and the equally prompt and natural reply was "every good," since, if we can make a person under its impression deaf or blind, or dumb or lame, or sad or merry, or drunk or sober, or cold or hot, or wet or dry, or sore or whole, or sick or well, or in fact anything we please, we may apply it to the operations of surgery; and keeping this object in view, I resolved, on the first favourable opportunity, to try its usefulness.

I will not digress at present to relate any of the numerous singular feats that have been performed under its influence, and with which most of your readers on this side of the Atlantic must be familiar; although I find it has taken no root on the other side of the water yet, not having found favour in the eyes of the British public; but I will confine my remarks to one single case.

William Corrigan, farmer, of Valcartier, aged 55, called on me on the 11th instant, with a letter of introduction from his clergyman, begging of me, as a personal favour, to examine his case, and tell him exactly (to use his own words) "what he had better do." I found him labouring under an osteo-sarcomatous tumour which occupied a large portion of the right side and base of the inferior maxillary bone. A part of the lower lip was wanting, a large portion of the *orbicularis oris* having been destroyed some time previous by a quack, from the application of plasters for the cure of cancer, leaving an unseemly gap and cicatrix.

He stated that the tumour was of recent growth, being only of eight or ten weeks' standing at most, and was rapidly increasing. When I informed him that I feared the removal of the diseased part by the knife was inevitable, he expressed great dread and apprehension, stating his fears that he should either die under the operation, or be unable to bear it, and expressing a wish to try the effects of some other remedial means. I therefore advised him not to be bound by my solitary opinion, but to consult other medical gentlemen, and recommended his calling on Drs Douglas and Blanchet, to whom I offered him an introduction. He then said, "I will tell you the truth, Sir; I went to Dr Douglas a few days since, and he told me the same as you do; and desired me to come back now, to have the operation performed; but I am afraid of it. I am afraid I cannot bear it," &c.

Having called on Dr Blanchet, he again saw Dr Douglas, who observed that the growth of the tumour had been very rapid since he had last seen it, only about ten days before, having nearly doubled its growth, which the patient himself admitted. The patient at the same time consented to the performance of the operation on the following day, on being assured that no danger would attend it.

I now informed him that, as his dread of the operation was so great, I would place him under an influence, without medicine, and without depriving him of either sense or consciousness of what was doing, by which he would feel no pain during the operation; and desired him to come to me in the evening, that I might impress him beforehand. He did so, and in a very short space of time I had impressed him so completely as to control sight, muscular motion, and feeling. I desired him to return on the following morning early, the 12th instant, as the operation was fixed for 11 o'clock. He did not, however, return till past 10 A.M. when I again impressed him, with the additional result of controlling taste, as well as the other senses, and completely destroying sensation in any isolated portion of the body. I now knew that I had obtained my object, and immediately proceeded to inform Dr Douglas of the success of my experiment, who received the intelligence with about as much apparent credit as if I had applied for admission as an inmate to the lunatic asylum, of which he is one of the proprietors, merely saying, " Very well, I will be down directly."

At the appointed hour Dr Douglas arrived, accompanied by two medical friends, and a student or two; and the patient, with some of his friends and acquaintances, proceeded to the operating room, under the biological influence. Being placed in position, I gave him a galvanic disc to hold in his right hand during the operation, and placed myself in a situation to command his eye, without interfering with the operator; and having by a series of passes destroyed sensation in the head and face, I desired him to keep his eye steadily upon mine, paying no attention to the operator or his assistants; and that he would feel no pain, although he would know what was going on about him.

Dr Douglas commenced the operation by extracting the right inferior cuspid tooth, which seemed to produce no sensation whatever; I continuing the whole time of the operation to command his eye, talking to him, and making biological passes. The operator then made an incision through the integuments, muscular fibres, &c., down to the bone, commencing about the junction of the second incisor and cuspid tooth of the left side, and continuing obliquely downwards and inwards towards the right side, and about an inch below the base of and parallel to the inferior maxillary bone, and extending backwards to a little beyond the posterior inferior angle of the bone; and then dissected back the flap, exposing all the external surface of the bone. He next sawed through the bone anteriorly, by a perpendicular section through the alveolus of the cuspid tooth of the right side; and posteriorly obliquely downwards from the root of the coronoid process, the two posterior molar teeth being gone, to the angle of the jaw; and then dissected away the detached and diseased portion of bone from the soft parts, tying only two arteries. The flap was then brought down, and secured by five pins and twisted sutures.

On telling him that the operation was completed (which was performed with Dr Douglas's usual skill and dexterity), and asking him if he felt any pain, he replied at once,—"No! I felt you drawing the tooth *a little*, but *it did not pain me;* and I saw you, and *heard* you sawing through the bone, but *I felt nothing at all;* I knew all you said and all you did."

On Dr Douglas ordering him to be carried up to bed, he started briskly out of his seat, and, full of excitement, exclaimed,—"I want no one to carry me, I can carry myself; I can walk as well as you can;" and proceeded at once to his room, refusing the assistance of my arm or hand; and when arrived there, I proceeded to remove the biological impression in the usual way; which having done, he said,—"I feel it now, I feel a smarting." This was the first indication or expression of sensation.

A remarkable feature of this operation, besides being painless, was its *bloodless* character, the whole amount lost being probably, if carefully collected, not more than *one ounce;* the division of the facial artery being followed by a mere jet a few inches high, which, with a smaller branch, was at once controlled.

The patient having been placed in bed, we left him; but in little more than half an hour we were summoned by a messenger, stating that the wound had commenced bleeding afresh. We were both on the spot promptly, and found a tolerably copious hæmorrhage going on both from the mouth and external wound. The sutures were removed, and reaction being fully re-established, three bleeding vessels presented themselves, to which ligatures were applied. The patient now complained of pain during the application of the ligatures, as we had not placed him under the electric influence again, since the application had evidently the power of diminishing or impeding the circulation in the part influenced. We now applied only one suture to the lip, lest hæmorrhage should again come on, and a napkin wet with cold water.

Throughout the whole after course of this case, there was not a single untoward symptom, or the slightest trace of any morbid impression, healing having regularly and rapidly advanced; and no medicine, excepting a dose of sulphate of magnesia, on the morning of the 14th instant, was either needed or given. On the 15th two additional pins and sutures were applied, and on the afternoon of the 17th he proceeded home, where he is doing well, as I heard from him on the 21st. The sutures were removed before he left. The pulse, previous to the operation, was 74, and during the whole week after, ranged between that and 84. He suffered little pain. Slight headach one night, but always slept well; and the appetite was almost unimpaired.

It may be proper to remark, that the so-called cancer was of eighteen years' standing or more. It was a mere fissure of the lip, becoming troublesome in cold weather. All the neighbourhood in which the empirical practitioner above referred to resides is dotted over with persons who bear the marks of his "cure of cancer," in the shape of disfigurements of the nose, lips, cheeks, &c. On applying his plaster, which is most adhesive, he tells his victim that "if it is not cancer it will not stick;" and as it always "sticks," he is looked upon by his dupes as their great benefactor.

The patient had never heard anything about biology, and could not therefore be mentally influenced by anything he had heard or seen before.

Dr Douglas expressed his extreme satisfaction and astonishment, after the operation, at the results, and signified his determination to follow up the application of its influence. He then informed me, that Corrigan had called on him in the morning (when he ought to have come to me), to ask his opinion of electro-biology; and that he had told him what he then believed, which was, that it was useless, as he had seen its seventh cousin, mesmerism, often tried without any positive or satisfactory result; but that, "if Dr Marsden thought it would do any good, let him try, as, if it did no good, it would do no harm; but that he was sure he could not remove pain, and that he must make up his mind to bear it." Seeing that Corrigan had the most unbounded confidence in Dr Douglas, the success in this case was complete, as he was actually impressed against his conviction, and with a feeling that failure would be the consequence; besides which, no one present excepting myself anticipated success. So confident, however, was I in the power I possessed, that I wrote a letter to the priest, in reply to his, by a person who was going home the night before the operation, in which I informed him that I was going to operate on his parishioner biologically the following day, "and that he would feel no pain."

6 Anne Street, Queebec,
23d December 1850.

ART. IV.—*Notice of the Professional Life of the late John Walker, Fellow of the R. C. Surgeons, Edin; with an Account of His Method of Treating Stricture of the Urethra by means of Fused Caustic Potass.* By WILLIAM BROWN, F.R.C.S. (Read before the Medico-Chirurgical Society, 1st May 1850.)

ONLY the elder members of this society will recollect Mr Walker; because, although his death did not take place till 1841, yet he had retired from practice for a long period, and, during many years, his infirm health excluded him from general society.

His father, Dr Robert Walker, was long a respected member, and for several years treasurer, of the College of Surgeons, and left, in his Treatise on Small-Pox, published in 1790, a favourable specimen of his professional attainments.

John Walker was born in 1766, and received his primary education, partly at Mr Ramsay's school in Dunfermline, and partly at the High School of Edinburgh, under Mr French.

For a number of years his father rented a cottage, with a few acres of land, at Lasswade, the same which long after was occupied by Sir Walter Scott. In that beautiful spot, the younger part of Dr Walker's family spent most of their summers; and to his country residence in childhood may be ascribed that unquenchable love of natural scenery, and that delight in open air occupations, which characterised the subject of this notice throughout his entire life.

He received his medical education in Edinburgh, where the lectures at the University, the wards of the Royal Infirmary, and the Public Dispensary, offered him very ample opportunities of learning his profession. He cherished a strong feeling of attachment to his teachers; and for Dr Duncan especially he always expressed much gratitude. In addition to these more public sources of instruction, he was favoured with the sagacious superintendence of his excellent father. There was much that was burdensome and unprofitable in the medical apprenticeships of that period, of which the sons of surgeons had their full share; but there was also a large amount of practical knowledge obtained, indeed larger than what now falls to the lot of students in general. There were opportunities of witnessing the progress of cases, and of assisting in their treatment. There were, above all, the daily, casual instructions of a superior, teaching the learner what he did not know, correcting him when he was in error, and encouraging him when he did well.

In September 1787 he repaired to London, to pursue his studies in that new and extensive field. He resided in Gerrard Street, Soho, with Mr Smith, a surgeon; but his studies were chiefly directed by Dr George Sandeman, who was his relative. I possess the correspondence of his father and himself at this time. There is much in it that is interesting; exhibiting as it does, on the one side a matured judgment, genuine affection, and sincere piety; on the other, want of knowledge of the world, hastiness in forming conclusions, and yet honesty of purpose, without guile. A few extracts from these letters may be not unworthy of a place here.

One of his letters complains of the hardships of dress, which had annoyed him much, especially as the ship which carried his trunk had been detained in Leith for some time. His father writes in reply: "I think in general, if you are clean and neat, and your hair scratched out with a very little powder, it will answer your attendance on the class and your ordinary company; but when you are upon invitation to dine, or waiting upon any of your friends, you must certainly fall in somewhat to the taste of the times, and appear as a human creature, which the world interpet, *dressed a little*. A philosopher will easily perceive the insignificance of this; but it is a tribute we must pay to the customs of people or to the fashion, unless we were people of importance or independence, who can take the liberty to do as they please. If any trivial disappointments in your situation lead you to relish home better, and engage you in study, writing, &c., and making the most of Mr Cruickshanks, it will be a noble acquisition; your improvement in medical knowledge is the great point; and remember you have either a physical or chirurgical examination waiting you. Keep up the languages, and try to get to the bottom of everything; a superficial knowledge will neither answer this nor enable you to practise with satisfaction."

He writes, on the 24th October: "Mr Cruickshanks's lectures are little better than the demonstrations of Aitken. Monro is as far superior in style and phraseology as you can well imagine any two things. He takes much pains in demonstrating, which is all required; but he is a mere pedant and fop in language and dress. He has done with the bones, and has begun the muscles to-day."

His father replies: "As you are not attending Mr John Hunter's lectures, I am not sure but Mr Smith can oblige you with a copy of them, or notes from them. He is a peculiar kind of man in his way, but has many original thoughts. Could you not get access to hear him some day?" He writes in answer: "I am to get John Hunter's notes soon."—"I am surprised Mr Smith should bestow such commendation upon the lectures here. Mr Cruickshanks has not above fifty, while all the others have at least 200. He gives, in my opinion, a very confused, dry, unmethodical course, far inferior to Monro's. They spin out the time most stupidly; and, as they follow no order or arrangement in giving the muscles, they make them quite confused. They will fly from the *sterno-mastoideus* to the *rectus abdominis*, from thence to the cucullaris, then to the buccinator, without order or method. They take them just as they occur, but I trust more to the dissections than to them. Our resurrection man is taken up, which has produced great want of subjects. There has been a subscription to enable him to carry on his prosecution."

It was long after this ere the medical profession were enabled to escape from the degrading connection here alluded to. Honour to Mr Warburton and the other enlightened legislators who at length procured for us the Act of Parliament, which gives a legal sanction to the pursuit of anatomy!

A letter from his father inquires, "Can you get no opportunity of seeing John Hunter perform an operation in St George's Hospital, or any of the other surgeons of eminence? I believe there is as much to be seen in our infirmary as in any of these hospitals; the difference is, that here we have such a number of surgeons, each of whom only attend a short time, and so have a long interval before they come on again; whereas it requires constant practice to render a surgeon any way neat and perfect in operations. In the London hospitals men of known character are chosen, who, by constant attendance and application, come to a great degree of perfection in all the different parts of surgery."

A letter of 12th Jan. 1788, says: "We are here in great fears about dissecting. They are cutting their fingers, and a number of people have lately died from the same cause. I have not yet begun to dissect." In the same letter he mentions a different subject: "When I called on the Doctor, he was preparing to go out, and the carriage was at the door. He scarce gave me time to speak to him, but hurried me into the vehicle, and without saying a word, drove to Covent Garden Theatre, where, astonishing to tell, I saw a man, ninety years of age, in the character of Shylock, in the Merchant of Venice. You may conceive how he performed, when I inform you that I, who look with such contempt and indifference at those things, was astonished to admiration; indeed I never saw anything I could call a play before this. But what a prodigy, to see an old man at that time of life acting with such vigour and energy! The farce was the old man's own; but I have not told you his name: it is Macklin."

His father then writes: "In my last I told you of J. H.'s examination. He did not give that satisfaction I would have expected from him. His paper was short and trifling (upon issues), and he defended his own thesis very weakly. He was asked the number and situation of the ventricles of the brain, but was very deficient in his account of them, as also in several practical questions. Some he answered well enough. We however appointed him a second lesson, but gave him a longer time than he wanted for the discussion of it. I hope you will make your own use of this, and improve yourself in anatomy and practical surgery as much as you can." In another letter, 29th January, he adds: "I am glad to here by Dr Sandeman this day, that you have entered the dissecting room; and I only give you this advice, in case of cutting your finger, to apply a little caustic to the wound immediately; it will give a little pain, but don't regard this."

A subsequent letter says: "Mr M'Pherson paid £21 to St George's Hospital for twelve months, and only stayed six. The doctor is going to ask John Hunter, under whose care he was, to allow me to make out his time, but the result is uncertain."

On 22d March he says: "I write you now with more satisfaction than I have done this some time; for I was really troubled and uneasy at not having had an opportunity of dissecting; but now I am engaged with all the enthusiastic ardour you could wish, for I hope, by the time I have cut up two or three youths, I shall be pretty well acquainted with the human body. I am sorry, however, I have been obliged to lay out more money than I intended, by entering with the great John Hunter, at his dissecting room. As my principal view in coming up here was dissection, I thought it was folly, for the sake of three guineas, to be wholly deprived of it, which must have happened had I continued where I was. I have got in amongst a chosen few, all friends, and old acquaintances. The whole that belong to the dissecting-room are Mr Home, brother-in-law to John Hunter, a very clever young man, and one that has shone forth in the medical world, and will in a still more eminent degree. He is surgeon to St. Martin's large workhouse, and has a pension from Government for some services; but above all, he has taken a liking to me, and will do all he can to serve me, he says. He carried me yesterday to a dissection of one of his patients; it was very kind and obliging indeed. He is to get me made a member of the Lyceum Medicum, a famous society in our neighbourhood; he is president of it. He is to make me a present of a ticket to his course of lectures on *Lues Venerea* which last six weeks. They are very fine indeed. Am I not well off, think you? The next is Mr Bell, at Mr Hunter's, he makes his preparations, &c.; a good lad indeed, and friendly to me. You desire to know remarkable occurrences, and I have just one to tell you, that perhaps you never before heard the like. There is in the dissecting-room a subject in which nature seems to have turned every thing topsy-turvy. The apex of the heart points towards the right side; the large lobe of the liver lies on the left side; the spleen lies on the right side; and several other particulars, which I have not time to tell you of."

All his subsequent letters are in this strain. Such was his zeal, that even to his sister he writes: "I shall have a fine set of preparations when I come down, as they are all so obliging to serve me; I mean at John Hunter's. I am in the dissecting-room from nine to three."

On 19th April, he notices the weather being so warm as to interrupt the labours of the dissecting-room: "I believe I shall treat myself to the play to-night, I feel so jaded and worn out. John Hunter has been complaining these some days; it seems something resembling a putrid sore throat. He takes two quarts of bark decoction in 24 hours."

It cannot be doubted that in such a situation, and under such a teacher, his acquaintance with the structure of the human body would become familiar and accurate. This was truly the case; and during his professional life, the benefits of this dissecting room education were very conspicuous. It would not alone produce an accomplished surgeon, but it forms the best preparation for the study of disease; and no one who neglects it has a right to expect full success. There are indeed men who are ever thinking of the mere animal structure, and overlook the fact that the patient before them is a living man, who possesses feelings, and has acquired habits, which modify the functions of his body. These men are truly in error. The patient's bedside is the right place for learning disease, but it is learned best by those who have previously studied the structure in the dead body.

At the close of the winter session, he paid a visit to his uncle Dr James Walker at Falmouth, and spent several weeks in that part of the country. He thus writes of the vicarage of Linkenhouse: "It is, next to Lasswade, the most delightful place I ever saw, just Scotland over again. We are quite surrounded with hills and vales; wood and water giving the most pleasing variety. What a contrast with the dead level of the London country! My cousin makes all the butter herself, which is done every morning, but is made by a quite different process from ours. I will let you into the secret: after milking, they put it over the fire in a large ten pint earthen plate, and let it simmer there till the cream begins to bubble up. They then take it off the fire and let it stand two days to ferment a little; after which, cousin, with her own fair hands, presses it about half a minute, at the end of which, the butter is produced. The cream is called clotted cream, and is as thick as porridge almost. The buttermilk is quite sweet, and of this they make puddings for the children. You cannot conceive how fond Cornish people are of pies. Everything enjoying life, whether animal or vegetable, they clap into a pie."

While he was at Falmouth, the surgeon of the Duke, mail packet, was taken ill, and the captain induced him to occupy his place in the voyage to Quebec. The voyage was not a very agreeable one. There was a great deal of rough weather, and the young surgeon suffered so severely from sea-sickness, that he was not of much service in his professional capacity. The sea-sickness continued during a great part of the voyage, and resisted every remedy, till he thought of a maxim of Hippocrates, that exercise of the upper extremities is good for sickness, and he was compelled to work at the pumps. This severe and continued exertion, with probably the mental effort which attended it, was the means of restoring him to health.

It was for some time expected that he would need to spend the winter in Canada, but he at length succeeded in getting away before the river was frozen over, and he reached Falmouth again in the end of December. In the homeward voyage, an incident occurred which made a vivid impression upon his mind, and which he afterwards referred to with grateful emotion. The run down the St Lawrence was rendered tedious and hazardous by a dense fog. One day, the fog suddenly cleared away so far as to expose to view a rock which was directly in their course, and on which they must have otherwise inevitably struck. Occurrences of this character, escapes from imminent danger, have been noticed by all of us, and ought not to be forgotten.

He spent the winter and spring of 1789 in London, and during this period he continued his anatomical and hospital studies. He was also a good deal occupied with the publication of his father's treatise on small-pox. One of the chapters, "On the Theory and Prevention of Pits," referred to the published observations of Mr Hunter; and the author being desirous of obtaining his opinion, sent him the chapter in manuscript. In reply, he received a letter which I have the pleasure of exhibiting to the society. A single sentence of this letter lets us into his mental character. He says: "I make it a rule not to read, but it is impossible upon all occasions to keep to that rule; and as a fact was to be settled, in which, although I was concerned, yet the public was more, I found myself called upon to assist in the establishment of that fact, whichever way it was; therefore I have read your manuscript."

Truly, had John Hunter read more of the writings of others, even his masculine understanding might have acquired more knowledge than he actually did. But his desire to establish a fact, "whichever way it was," indicated the true spirit of a philosopher, and was the secret of his successful investigations. Would that there were more of it among inquirers at the present day!

About this time Dr Walker wrote to his son respecting his future prospects in life, and received an answer expressing his purpose of settling in Edinburgh, mainly with the view of assisting his father in his declining years. This frank and dutiful communication procured a letter, of which the following extract is worth giving: "Young people that have seen a little of the world might be ready to consider sitting down in such a place as this as unpromising and unequal to their own ideas of things. This led me to open up to you what my ordinary income has been for several years past,—no great inducement to an ambitious mind, but, in my own opinion, a sufficient encouragement for any sober-inclined person who is not seeking very great things for himself in this world, but who would rather wish to pass through it with a moderate competency, a Divine blessing, and laying himself out to be as useful as possible in the line of his profession to poor and rich. In the whole of this matter my thoughts are engaged for your advantage, and in looking round I cannot see any place you could settle in that could afford you an equal prospect. The surgeon of a ship, unless in time of actual war, is an idle life; the army is not much better, and even more unprofitable; yet one of these is commonly the way in which many of our medical youth spend some of the best years of their life before they settle to actual business. After all, it is the Lord alone that can put a blessing on the most rational schemes, and we must look to Him and depend upon Him for it. This I trust you shall obtain, as your motives for being here are pure and disinterested. I thank you most sincerely for this new testimony of your regard and affection for me, and wish I may have it in my power to return it suitably. Your affection for me I never called in question; but I could not use it as an argument to determine your conduct in a matter of so much importance to yourself. In short, I wished you to do this in a free and spontaneous manner, without constraint: but as you have expressed your own sentiments on this matter to my highest satisfaction, and more properly than I could do, I shall there let it rest, praying that you may experience all that happiness, comfort, and success, that your disinterested motives and filial affection merit."

After returning to Edinburgh, he became a Fellow of the Royal College of Surgeons, on 15th September 1791, and manifested his accustomed ardour in all its proceedings. For several years after this, the subject which most engrossed the profession, and divided it into two hostile camps, was the surgical department of the Royal Infirmary. Mr Walker joined the party of the younger surgeons, who demanded the continuance of the existing system, by which every Fellow had a right to two months' practice in rotation. The change which took place, by which the managers selected from the College a certain number of surgeons, was held by him to be a violation of justice, an injury to the patients, as well as to the profession. No one would now propose a return to the old regime so pungently described, perhaps caricatured, by Dr Gregory in his famous memorials; and yet one would deprecate any arrangement by which the younger members of the profession should be excluded from the advantages of an opportunity of treating surgical diseases on a large scale.

Driven from the Infirmary by what he thought the tyranny of the managers, and indignant at the conduct of the majority of the College in yielding up what he considered the rights of its fellows, he kept very much aloof from both. He very rarely attended the meetings of the college; and, though he did not withhold his contributions to the funds of the Infirmary, yet he continued for many years to feel sorely aggrieved.

He became a successful practitioner. His income, which was entirely derived from his own professional exertions, was amply sufficient for his wants. When his infirm health compelled him to retire from active life, he invested the greater part of his means in an annuity, which permitted him to enjoy many of life's comforts, and among these, one which he valued much, the power of giving to the needy. Often was he deceived in the objects of his benevolence, and it must be acknowledged that he sometimes showed caprice in the way in which he bestowed his benefactions; but he was a kind-hearted and benevolent man, and very many had reason to thank him for his generous and untiring efforts on their behalf.

In later years, an overweening and morbid attention to his own health, which was much impaired by fever and other causes, led to his comparative disregard of every person and every thing which did not bear upon this. Even then, however, there were occasional exceptions, when some one case of disease or of distress interested his mind, and then he threw himself into the case with much of his former energy.

He did not commit to the press any of his writings, numerous as they were, except a "History of a Singular Case of *Petechiæ sine Febre*, accompanied with excessive hæmorrhagies, terminating favourably under the use of the vitriolic acid," which appeared in Duncan's Annals of Medicine for 1797.

He spent several of his latest years at Moffat, which was with him a favourite residence. He esteemed it, and recommended it extensively to invalids, not so much for its mineral water, which he did not himself use, and did not generally prescribe for others, but for its salubrious climate and beautiful neighbourhood. And who that has spent even a few days there, does not recollect with delight its green hills, its clear running waters, its very air, redolent of health? He died here 26th December 1841.

Life is made up of days and years. Each of these periods of time has in it incidents which are interesting to the individual himself, but little so to the world at large. Every man is surrounded by a circle, of which, however small, yet he is the centre. To a well regulated mind, there is nothing in this to foster vanity; there is much to lead to humility. There were no incidents in Mr Walker's life to call for special remark in a notice of this kind; but I shall attempt to give a few of the salient points in his professional character, which may make the members in some measure acquainted with him, and which may fitly introduce his own letter on stricture.

1. Ardour in the exercise of his profession characterised him during his whole professional life. He may have been erratic in his medical studies, but he was not an idle student. He was peculiar in some of his professional views, but he was not inactive; he was in no respect a common-place or routine practitioner. He very much looked on a case with his own eyes, and treated it on his own views. When the case appeared interesting to him, he devoted to it all his energies, sparing himself neither time nor labour, and neglecting for the moment other cases which had no such importance in his estimation. He occupied hours with the case, watching every new symptom, watching the effects of his remedies, intensely thinking about the means of promoting the patient's welfare. He was certainly less anxious about the number of his cases than about the success of his treatment. It is not to be wondered at that when a case, which to the patient or his friends appears to be important enough, is overlooked by the medical attendant, he should meet with dissatisfaction from them; yet it is possible that the exclusive attention which each receives in turn may compensate for the comparative neglect which has been received. Such was certainly the experience of Mr Walker, and he did retain the confidence of a great number of his patients.

2. Perhaps, in consequence of this very ardour in the treatment of his cases, he demanded a corresponding submission on the part of his patients. He insisted on this even in minute particulars, and resented the neglect of his directions with a severity which might well be called unwarranted. He expected the patient to be unresisting, unhesitating, passive; and when from such passiveness the case became entirely his own, he put forth his entire power. He never showed the same interest when the patient complied with only part of his directions, or when in consultation with another practitioner he felt relieved of part of the responsibility. Indeed in consultation he always felt himself restrained, and the result was very often unsatisfactory to all parties. In professional consultations, how much is there for us all to learn! On the part of the junior, how much reluctance to obtain for his patient the assistance of another practitioner!—on the part of the

senior, how much a sense of his own superiority, and a tendency to cause this to be observed and felt by others! It is most conducive to the welfare of the sick, and to the advancement of professional knowledge, that the men of superior skill and sagacity shall be cheerfully acknowledged as such by their brethren; but their superiority will not be the less acknowledged by their abstaining from telling every one of it. There have been, and are still with us, men who are eminent as physicians and as surgeons, and to consult with whom is a pleasure and an advantage.

Medical practitioners of sagacity in other respects, commit grave errors in the tone of their directions to their patients. It is possible to make these so vague, and so contingent on the humour of the patient, or the patient's friends, that the value of the prescription is lowered in their estimation. But it is also possible to be so minute and unbending in particulars which are seen by others to be trivial, that they are led to infer that those directions which they do not understand may be equally troublesome and unimportant. There are particulars respecting diet and medicine, in which it is right to concede to the peculiar habits, or even to the harmless whims of the patient. There are others in which no concession ought to be made; and if the practitioner should be indulgent enough to yield, he will soon find that his influence for good on his patient's mind has passed from him.

3. No one who was much with Mr Walker will forget how much his ideas upon *influenza* coloured and modified his views of disease. That curious epidemic, which has been witnessed probably by all of us, has characters which cannot easily be mistaken. Its appearance after irregular intervals; the rapidity of its diffusion among the population; the severity, but short-lived duration of its attacks; its simulation of acute inflammatory disease; but the decidedly injurious influence of depressing remedies; and the debility which so generally attends and follows it,—are well known and acknowledged by all.

But Mr Walker supposed that the influenza did not terminate when the epidemic had worn itself out; that an *influence* of some kind remained which tainted the constitution, so that diseases subsequently contracted were of a different character, in consequence of that taint. He thought particularly that cases of febrile and inflammatory disease, occurring after the great influenza of 1802, did not require, and did not tolerate blood-letting, as they formerly had done.

That this view was a correct one, I have no intention of asserting. It is more probable that he ascribed to this *influence* what was more justly due to his own more correct diagnosis between inflammatory and non-inflammatory diseases. There were, however, many cases of persons whose constitution was materially weakened by that and other epidemics, and who, therefore, behoved to be treated upon principles peculiar, as it were, to themselves. All of us have seen cases of weakened frames, whether from previous malady, from imperfect nourishment, from intemperate habits, from unhealthy dwellings, or from mental depression, where acute disease is not to be treated as in more robust subjects. In such cases, depletion is very guardedly to be had recourse to; stimulants are discriminately to be employed; and the local affection is more to be considered as being an indication of debility, or as an accidental occurrence.

4. He ascribed to medicines, and especially to their combinations, a power over disease which is not generally conceded to them.

During Mr Walker's active life, the surgeons of Edinburgh were apothecaries. They dispensed medicines to their own patients, and had in their houses a shop, or surgery, or study, in which these medicines were prepared. There were very few public laboratories, or shops of chemists and druggists, as they are now usually called. Since then a great change has taken place. Surgeons generally have given up the dispensing of medicines, and accordingly the number and respectability of druggist shops have greatly increased. Nor is the change to be in any respect regretted, because it is not easy for a medical man engaged in practice to attend efficiently to the details of a laboratory. It is of real importance to himself, and to his patients, that his prescriptions shall be correctly made up; but this is more satisfactorily done as a separate trade, and every means should be used to extend this arrangement. It is possible for a surgeon to be his own cutler, as it is to be his own druggist, but, as a general rule, each department of business ought to be conducted by one individual.

Mr Walker's knowledge of drugs was accurate, and his attention to their different qualities, their forms of preparation, and their effects, was very remarkable. He conducted a great variety of pharmaceutical experiments himself, and in the chemical ones he was aided by Dr John Murray, with whom he was in habits of intimacy. The Materia Medica is now better understood, and the processes employed in converting vegetable and mineral substances into remedies for the cure of disease, are more philosophical than they were. Mr Walker had not studied many of these; but he gladly received hints of new remedies or new processes from any quarter, and not many years before his death was engaged in inquiries respecting the best preparations of digitalis and of cantharides.

He used combinations of medicines more generally than others did. He combined aromatics or other stimulants with almost every remedy which he employed. He seldom or never prescribed an emetic, a purgative, or a diuretic, without guarding it, as he expressed himself, with ginger, cinnamon, or such substances. I am aware that combinations are not fashionable, and that the tendency of the present views is rather to attempt to secure one result by one agent. But the experience of all ages is in favour of uniting two or more substances; and though many of the combinations of former times may have been unphilosophical, yet we may safely retain what is right in these, and reject merely what modern chemistry has proved to be erroneous. I possess numerous prescriptions of Mr Walker, which are valuable in this view.

5. The importance of removing an invalid or convalescent to the country was often dwelt upon by him. He thought that to give him an airing, and then to bring him to his own house in town, was to protract very much his period of feebleness, and that he ought to pass the night in a purer atmosphere. There is more in this than appears at first sight. Although chemical analysis may not be able to detect deleterious substances in the air of some one locality, yet experience may justify us in asserting that there is such an atmospheric constitution; and, while a man in perfect health may be able to tolerate it, yet when he is lowered by disease, it may impress its poisonous influence upon him to the extent of retarding his perfect recovery.

There is another principle calling upon the removal of the invalid, irrespective of the greater or less purity of the respirable medium. The efforts which a man makes to carry on his accustomed laborious pursuits must be unfavourable to his convalescence. It is natural for a man who feels that his labours are necessary for the maintenance of his family, who longs for activity, who knows that he is able for a certain amount of exertion, and who hopes that he may not suffer from a somewhat greater amount, to return to the post of labour too soon, and so to endanger his ultimate recovery. When such a one is removed entirely to a distance from his accustomed scene of labour; when he is precluded from his accustomed duties; when, in addition, he is placed in a sphere where everything is favourable for his recovery; where the natural objects spread before his eye and ear are all cheering; where town hours and town dinners are of necessity abandoned,—a revolution takes place in his weakened frame; his sleep becomes profound, and therefore more refreshing; his digestion becomes quicker, and therefore his appetite sharper; his muscular movements become more firm, and therefore he has more pleasure in walking; and when he returns to his home he brings with him a fresh stock of health, of mental and bodily vigour, which enables him speedily to make up what he may have lost by his absence.

6. Mr Walker insisted much upon the horizontal posture of convalescents from influenza and other debilitating maladies, as tending very materially to advance their recovery. He considered the upright posture as having the most injurious tendency. He exaggerated this as most of his practical cautions, but yet it is a caution of real importance. How often has a convalescent been thrown back by a prolonged upright posture, for the purpose of writing some important letter, or reading some engrossing book! The feelings of the patient are far from furnishing a correct index of his real ability to bear fatigue, and he ought to be detained on his bed or couch, even when himself longs to hold his head up in some active exertion.

In such cases there is not only the tendency to faint, but there are the œdema of the limbs, the coldness of the feet even before œdema is discernible, the blueish skin,—all showing that the vessels need support which cannot be so well obtained as by the lying posture.

7. In mania his experience was very extensive, and his treatment was eminently successful. What his precise treatment was, I do not exactly know, as he was very reserved in his communications on the subject.* This, however, is certain, that (in accordance with his practice in other diseases) he devoted a large share of his attention to each individual case. His patients were generally of the upper ranks of society, and their treatment was conducted in separate residences in the neighbourhood of Edinburgh, with attendants of his own selection and under his own control. He greatly disapproved of blood-letting and of lowering remedies generally, and considered these as being often the cause of protracted recovery, or of no recovery at all. He made much use of the cold bath in various forms. There was nothing of harshness, I believe, in his treatment; but he aimed at the command of the patient's mind, and when he acquired this, he felt confident of success. I have met with several of his patients, who speak of him, in connection with their illness, with deep affection,

There can be no doubt that at a certain stage of mania complete isolation is indispensable; and that, for the accomplishment of this, a separate dwelling, with various apartments in which the invalid may roam unobserved, or at least uninterrupted, is very well adapted. But when this stage has been passed through, the judicious arrangements of an asylum, and among these, the regulated social intercourse of patients in a similar state, will conduce to the recovery of all. By Mr Walker's plans, the first stage was conducted most effectively; but in the second stage, his patients were placed in circumstances less favourable for early convalescence.

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* Since writing the above, I have been informed that the circular cage, antimony, and digitalis, with moral control, formed his chief remedies.

8. In his treatment of syphilis, he was thoroughly of the old school. He could not acquiesce in the modern idea of the curability of the disease without the use of mercury, His experience had been very extensive. He had seen many cases in which he ascribed the greatest mischiefs to what he considered an imperfect course; and he believed that a lengthened perseverance in the sovereign remedy alone succeeded in eradicating the poison out of the system. He ascribed the evils attributed to mercury, rather to its abuse, and to its being administered while the patient was attending to his usual employments, exposed to the open air of our variable climate.

We, in the present day, are more disposed to ascribe the success which has doubtless attended treatment such as his, to the diet and regimen to which the patient is always subjected when he is entirely under the care of a judicious surgeon.

9. In stricture Mr Walker's experience was very extensive, and he had a large share of success. His success depended much upon his accustomed assiduous attention to each individual case; but chiefly, he believed, to his thorough and unhesitating confidence in the use of caustic.

It is not my part to defend his practice in this respect. He was not aware of those more correct views and more simple treatment which have been placed before the profession in later years. Whether these views will be universally adopted and carried out in practice, I do not know; but I am convinced that many a sufferer will be relieved, will be cured, by the perineal incision. Mr Walker, however, was a successful surgeon, and his treatment, unphilosophical as it may appear to us in principle, and severe as it certainly was in practice, was yet the means of a radical cure in many inveterate cases.

He was too much in the habit of making a mystery of his plans of treatment, and he was unwilling to exhibit his instruments to others. Liberality was not a very general character of the surgery of a large class of our surgeons half a century ago. Without boasting too much, we may claim for surgeons at the present day a greater share of regard for the profession at large, instead of a selfish regard to their own personal pecuniary interest.

Mr Walker evinced a very warm, almost a paternal regard, for his apprentices; and to one of them, Dr John Graham Stuart, stationed as assistant-surgeon in the Company's service at Ahmedabad, he sent a set of the instruments which he used in stricture, between twenty and thirty in number, specimens of which I now exhibit. He accompanied the present with a letter, dated 19th February 1824, detailing his mode of using them; and it is this which I take leave to submit to the notice of the society. I do it in accordance with the wish of Dr Stuart himself, that others should be made acquainted with the views of one whom he esteemed, and of whose success he was at times a witness. The whole may appear to some, who do not know how imperfect the caustic treatment of that day was in the hands of others, as a piece of idle antiquarianism. But still the instruments have done good service in their day, and may do so still,—unless the cutting system is perfect, and in need of no help,—in the hands of one who has time and address to use them. The addition to the catheter, too, may be trifling, but it is one of great use in many cases; and the light, hollow, silver bougies are very elegant instruments. The plan of treatment described in the letter has been useful to many, and I do not think that the society will regret that it has been laid before them.

"I need not say with what pleasure I send the caustic instruments, and I hope they will be as successful in your hands as they have been in mine. I need not say the object of the instruments is to apply the caustic not to the anterior part of the stricture, but within it, and that this forms the great difficulty in the treatment, and cause of the tedious cure, particularly in the long or ribbon stricture, as it is called, which is generally more diseased also. I consider, therefore, an instrument that can convey the caustic with undeviating certainty in this manner is invaluable; and I am truly surprised that, with all the genius possessed by modern surgeons, quickened also by the *sacra fames*, nothing of the kind has ever yet been attempted in this way.

"The caustic used with the instrument is potassa, which should be as perfect and uninjured as possible by the air's action. It must be reduced to fine powder in a small china mortar. To this add from a third to two-thirds of Spanish soap, also in powder. After incorporating them, a little soft water must be cautiously and gradually added, till it gets to the consistence of a paste, or soft mass for pills; and must then be put into a small wide-mouthed phial, firmly corked or stoppered. I sometimes add a small quantity of very pure and finely powdered opium, previously rubbing it with the soap, but whether with any advantage I cannot say. It will be as well not to prepare much of the paste at once. I seldom prepare above a drachm or a drachm and a-half at one time.

"In using it, take a small portion out with a silver knife or probe, and put it upon a bit of soft leather, which rub upon the holes of the instrument, till they are filled. Then wipe it clean with a soft rag, that the paste may be nowhere but in the holes. It must then be oiled, and introduced with as much quickness as the feelings of the patient will admit, down upon the stricture, which you must now *enter*, and after remaining a few seconds within it, move gently backwards and forwards three or four times, taking care not to go, if possible, beyond the limits of the stricture. After withdrawing it, I sometimes used to inject a syringe full of warm oil, which soothes the parts; and generally give an opiate, which is preferable *per anum*, by means of a small one-ounce syringe, which will convey an ounce of mucilage and 40 or 80 drops of laudanum with great ease.

" Before introducing the caustic instrument, it will be proper to pass a full sized common or silver bougie down to the stricture, but not to pass it. This widens the passage, removes spasm, and facilitates the introduction of the other.

" Should much pain, irritation, or suppression take place from the use of the caustic, I need not say fomentations to the perinæum, and opiate clysters, will be required, with the camphor mixture used for three or four times a day.

" I suppose you are aware that the slough produced by this caustic is quite different from that by the nitrate of silver. The latter is a tough tubular membrane, while by *this* it is gelatinous and bloody, as it acts at once, and dissolves the stricture, particularly if it is spongy and tender, of which we generally can judge by the feel in passing, by its bleeding readily, and by its being accompanied by a puriform discharge. When it is in this state, the potass acts powerfully, and brings away a great deal of gelatinous brownish slough.

" After the lapse of a few days, it may be as well to examine the stricture by the bougie, so as to ascertain if you have gained ground, and determine both the propriety of another application, and the size of the instrument to be employed; because a single application may have been sufficient to put the stricture in a state to be afterwards managed by the bougie; at the same time, as this mode requires the instrument to be firmly grasped by the stricture in order to its effectual action, we must enlarge the instrument as we gain upon the stricture, at the same time we must guard against undue irritation from the too frequent or too severe application of the caustic, and use as little of it as we can, till we know more of our patient, and what he can bear. Indeed, at all times, as a general maxim, I would say, never use the caustic when you can do your purpose by the bougie, though I know most strictures of long standing will not do without a few applications of the caustic; then the bougie acts with the utmost advantage, after the diseased surface is removed, which is the business of the caustic, and not of the bougie.

" I have often been surprised at the effects of a single application of caustic, when I have not had an opportunity of examining the patient for two or three weeks after it has been used and when, therefore, all invitation and swelling have left the parts. This should lead us not to be too hurried in renewing our applications; for, till the swelling subsides, we never can know what we have ined, and better act with caution. Though some recover much oner than others, I should say a week is the usual time.

"I do not think this caustic acts so readily upon healthy parts as e nitrate of silver. If, after one or more applications, therefore, u find the instrument, when withdrawn, clean, without slough, I ould be disposed to consider the parts much improved, and perps not requiring the use of more caustic.

"After withdrawing the instrument, it should be cleansed from ugh as well as caustic, by dipping it in hot water, and, with bit of pointed wood or tooth of a comb, clearing the holes; and is will be completed by the aid of a brush, so as to remove all mains of caustic. The instruments are covered with leather ps, which I have used for many years. Too great attention nnot be given to preserve the polish of the instrument; the ghtest scratch is like a file to the delicate membrane."

The letter contains directions for the construction of bougies med with lunar caustic, which he considered an aid in some rms of the disease. He describes a valuable varnish with which used to coat his bougies. He describes also silver bougies ted with a joint ivory dilator for the stricture very near the tremity of the urethra, and some other ingenious mechanical ntrivances. The letter was written in the confidence of friendip, without study. I have extracted those parts which related iefly to the caustic treatment.

RT. V.—*Cases which appear to prove that Secondary Syphilis is capable of being communicated to the Healthy.*

By JAMES STARK, M.D., F.R.S.E., Fellow of the Royal College of Physicians of Edinburgh.

ALMOST all recent writers on Syphilis are agreed that that disse is only communicable to the healthy while in its primary ge; but that, when it reaches its secondary and tertiary stages, ., exists in the form of various eruptions on the skin and muus surfaces (secondary), or of affections of the subcutaneous mucous, fibrous and osseous tissues (tertiary), it is incapable of nsmission to a healthy person.

It appears to me that in arriving at this conclusion, the medical n of the present day have gone too far to the opposite extreme the old doctrine of the infectious nature of syphilis, and have wed themselves to arrive at this conclusion, from experints of a somewhat questionable nature. The chief experints on which their conclusions are founded rest on the fact, that matter taken from secondary or tertiary sores, and applied to other parts of the patient's body, do not in him generate sores similar to those from which they were taken; and they hence jump to the conclusion, that secondary and tertiary syphilis are not contagious.

It does not appear to me that such evidence is of any weight in establishing such a doctrine. Matter from a sore may not be capable of raising a similar sore in a person who is suffering from secondary syphilis, and yet be capable of communicating infection to a person who is healthy.

As in matters of this kind facts are much better than theories, I beg to offer to the profession the three following cases of secondary and tertiary infection, in which I was enabled fully to trace the history of each case, and was forced to arrive at the conclusion that the disease was not propágated in its first or primary state, but unquestionably in its secondary or tertiary forms.

As these three cases were the only ones met with in the course of a seventeen years' practice, they are not recorded with the view of denying or disproving the general truth of the non-communicability of secondary or tertiary syphilis, but with the view of showing that exceptional cases do occur, and that they are perhaps more common than writers on syphilis are aware of. When a person contracts this disease primarily, he in general avoids his usual medical attendant, and seeks the aid of those who may have acquired some notoriety for their attention to cases of this kind. Buf if, after the lapse of months, he marries, and communicates secondary syphilis to his wife, the case comes unsuspectingly before the ordinary medical attendant, who, for the sake of the parties, wisely keeps the secret to himself; and if he omits to record it by publication, the knowledge dies with him, and is lost to the profession.

A. R., a servant girl, in the fourth month of pregnancy, contracted syphilis in the shape of primary chancre, from her paramour, but, by the employment of appropriate remedies, was perfectly cured before the seventh month. At the full term, 1st August 1834, she brought forth a female child, to all appearance healthy and free from disease; and, as she got a situation as wet nurse within a month, she gave her own child to Mrs M'D., an old woman of about 60 years, to bring up on the bottle or by the spoon.

On the 6th of January 1835 I was requested to visit Mrs M'D., for an affection of the throat, which gave her much uneasiness. I found her labouring under decided symptoms of syphilitic sore throat. The uvula was the seat of ulcerative action, and was more than half destroyed. There was a large perforated ulceration through the left *velum palati*, and the right *velum pa-*

lati and palatine arches were the seat of superficial ulceration. The voice was completely altered in tone. In the nose a considerable portion of the septum was destroyed by ulcerative action, the turbinated bones were also the seat of ulcerative action, and part of them was denuded and exfoliating. On further examination, nodosities were detected on the tibia, radius, and forehead, and several cupreous spots were on various parts of the body.

As there could not be the slightest doubt as to the nature of the disease under which the old woman laboured, I was anxious to learn how the disease had been communicated to her. She herself had not the slightest idea what disease ailed her, nor did she know anything of the venereal disease. On inquiring at her neighbours, it was found she had been a widow for some years, was of regular habits, strictly moral in her conduct, and industrious, and not one had the slightest suspicion as to the true nature of her complaints, unless they could have been derived from the child which she had undertaken to nurse.

The child was therefore carefully examined, to see whether it presented any symptom which could by possibility show it laboured under any form of syphilis. The child was plump, and apparently healthy, but was found to be affected with the following syphilitic appearances. The roof of the mouth, close to the *velum pendulum palati*, presented an ulcerated surface, red and sunk in the centre, covered with glassy-looking matter; the fauces had a coppery-red appearance, certainly not that of health. A few faint blotches of a coppery-red colour were apparent on various parts of the body, and a few warty excrescences of minute size surrounded the anus. No doubt, therefore, remained that the child was labouring under symptoms of secondary syphilis,—the only question was, whether the child derived the symptoms from the nurse, or the nurse from the child.

From the report of the neighbours, the advanced age of the nurse, and the fact that the woman had been healthy previous to taking the child to nurse, it seemed very unlikely that the symptoms were communicated from her to the child; inquiry was therefore made regarding the mother of the child, when the facts above narrated were elicited from the medical practitioner who had attended her. As I could not understand how the old woman could be infected from the child, seeing she did not suckle it, I was curious to learn how she fed it, and found that she passed every spoonful of meat for the child first through her own mouth, —a bad habit many of the lower classes have, done, no doubt, with the view of ascertaining that the spoon-meat is not too warm. The communication, therefore, between the mucous surface of the child's mouth and that of the nurse was direct every time the child was fed; no wonder, therefore, that the disease in the mouth of the one was transferred to that of the other.

On the appropriate remedies being used, the infant and nurse recovered.

This case is of some interest, as apparently demonstrating that secondary syphilis in an infant may be latent at birth, yet break out afterwards, and communicate the disease to a healthy person, from the secretions of the mucous membranes of the one coming in contact with the mucous surface of the other.

The next case is a very striking one, as exhibiting the evil consequences which result from a person, with even very faint traces of secondary syphilis, engaging in matrimony.

Mr R. M. contracted syphilis, in the form of primary chancre with bubo, in the beginning of the year 1845. Under appropriate treatment he soon recovered, and remained for several months free from any symptoms of that disease. At the end of this period he was alarmed by remarking several blotches on various parts of his body, while at the same time he began to complain of sore throat, general debility, with occasional aching pains in the extremities, particularly in the shin bones. He also remarked that when at stool he had an involuntary discharge of mucous fluid from the urethra, without erection. He had, however, no pain in making water, no irritability of bladder. On consulting his usual medical attendant, he was informed he was affected with symptoms of secondary syphilis, and by steadily pursuing the course of treatment recommended, gradually got the better of most of his complaints. After every other symptom, however, had disappeared, there still remained more or less of the involuntary mucous or seminal (?) discharge from the urethra when at stool. But as this continued obstinate for months after every other symptom of secondary syphilis had disappeared, his medical attendant attributed the discharge to weakness, but declared him free from all taint of that disease.

He was now anxious to get married to the lady to whom he had long been engaged; but, afraid lest he should communicate to her that loathsome disease, previous to taking this step, he consulted two other medical men. They agreed that he appeared to be perfectly cured; that the small involuntary discharge of mucous fluid when at stool was nothing, but probably resulted from weakness, which might be removed by marriage; and that, in their opinion, no risk would be incurred of communicating the disease to another. He accordingly married in October 1846.

About a month after marriage his wife began to complain of sore throat, which was attributed to cold, and treated as such. Soon after, discharge from the vagina occurred, which was treated as *flour albus.* Sense of heat and irritation within the vagina, and also in the urethra, followed shortly after, and an irritable eruption appeared around the anus, on the pudendum, perinæum, and upper part of the thighs. She consulted first the former medical attendant of her husband, then another practitioner; but not deriving any benefit from their prescriptions, and the labia becoming so swollen, that she could neither sit nor walk without much pain, she put herself under my care on the 19th July 1847.

She complained much of general debility, and that she had fallen off much in flesh during the last three months. She complained of aching pains in the bones of the thighs and legs, so severe at times as to prevent her sleeping. She had also general uneasiness over the body, and a weighty, dragging sensation in the loins and seat of the womb. Her appetite was bad; her bowels irregular; the catamenia profuse; and at all times there flowed an irritant discharge from the vagina. She had considerable uneasiness in the throat, and whenever she endeavoured to swallow a large mouthful of fluid, some of it escaped by the nostrils. On examination, the throat was found to be the seat of ulceration. An opening, about the diameter of a goose quill, pierced the soft palate on the left side, and several superficial ulcerations existed on the *velum pendulum palati*, fauces, and tonsils. The mucous nasal discharge was greater in quantity than usual, and occasionally tinged with blood, but the Schneiderian membrane did not present any ulcerations, so far as could be ascertained. A few spots of *lepra venerea* existed on the arms, legs, and neck; and the pudendum, perinæum, and inside of the upper third of the thighs were the seat of a fretting ecthymatous rash, while about half a dozen of mucous tubercles were observed round the anus and on the perinæum. The labia were excessively swollen, red, and tender. On the neck and shoulders about a dozen of smooth, white, and glistening spots, each about the size of a lentil, were observed, which appeared about the same time as the ecthymatous rash, but only gradually assumed their present white and glistening appearance. On the tongue existed an ulcerated surface, which she stated first appeared as a hard pimple, at the summit of which matter had formed, and when it broke, formed a small ulcer, which appeared to have no tendency to heal, having a depressed, glassy-looking centre, and somewhat elevated whitish edges.

Not a doubt, therefore, remained that the whole symptoms were those of secondary syphilis; so, after prescribing the appropriate remedies, without mentioning the nature of the complaint, I took the earliest opportunity of waiting on the husband to ascertain his state. I then got from him the statement given above, which I have every reason to believe was the truth.

On examining the husband to ascertain whether he exhibited any symptoms of syphilitic infection, it was found that two faint coppery-coloured spots of *lepra venerea* existed over the ulna of the right forearm, one near the wrist of the left forearm, and one over the tibia of the right leg. He still had involuntary discharge of a mucous fluid from the urethra when straining at stool, but at no other time; and had no pain in making water, and retained the urine for many hours. He complained of general feebleness, had slight redness of the fauces and huskiness of the voice, and suffered much from a suppurating tumour which formed under the tongue, which, after bursting, healed very slowly, only to form and burst again. When examined it existed in the state of an ulcer with a deep centre of an ash-grey colour, covered with a gluey discharge, and elevated thickened whitish-coloured edges. He had besides three small ulcerations on the tongue, which he said first existed as hard pimples, which suppurated and broke, and left the present unhealthy sores.

On mentioning to the husband my convictions as to the syphilitic nature of the disease under which both he and his wife laboured, he at once acknowledged that in that case the infection must have been derived from him, and blamed himself much for marrying so long as the involuntary discharge of mucous fluid from the urethra, when at stool, continued. He at same time assured me, that he had been so frightened by his first syphilitic attack, that he had never incurred the risk of another.

On subjecting both to the appropriate remedies, they recovered, and a healthy child has since been born, exhibiting not the slightest traces of syphilitic disease, nor have further symptoms of such disease since appeared in either parent.

A third case, tending also to prove the occasional infectious nature of syphilis, came under my care during the past year.

R. M'M., a married man of dissipated habits, contracted syphilis when his wife was in her third month of pregnancy. Till he was pronounced cured of this disease by the homœopathists who attended him, he carefully abstained from embracing or kissing his wife, lest he should communicate the disease to her. Before the child was born he had been pronounced perfectly cured; and, as this was the first child his wife had born, though they had been married many years, he used to carry it about, fondle it, and kiss it many times a-day. When the child was about three months old, its mouth began to get sore, it vomited its food, began to fall off in health, and various eruptions appeared on its body. The mother, who suckled the child, at the same time began to complain, first of sore nipples, then of the outbreak of an ecthymatous eruption on different parts of the body, then of sore throat, wearied sensation in the limbs, and general debility. When I examined the child I found it labouring under two sets of symptoms: one, those which usually attend aphthæ; the other, some other disease. The tongue, inside of lips and mouth, were sparsely covered with aphthæ; but in the centre of the roof of the mouth, partly over the bony arch, partly on the adherent portion of the soft palate, existed an ulcer of an unhealthy look, with a hollow excavated centre, covered with a gluey discharge and ragged elevated edges. The tonsils and palatial arches were of a deep red colour, and swallowing appeared to give the child pain. A muco-purulent discharge slowly distilled from the nose, and the child, in consequence of the swollen state of the lining of the nostrils, had some difficulty in breathing. The eruptions on the body were various and somewhat anomalous. In some places they presented all the characters of roseola; in other places, or mixed with the others, they were distinctly ecthymatous; and both of them were, on face, arms, and neck, mixed with the usual red gum or strophulous rash.

In the mother there was a deep ulceration in the right tonsil, a more superficial ulceration in the left, a ragged irregular-looking ulcer near the edge of the right pillar of the fauces, near its junction with the pendulous velum, and the whole back parts of the throat and fauces of a peculiar almost bright scarlet colour. A deep ulceration, with an irritable, irregular, somewhat undetermined circumference, surrounded the left nipple. The right nipple, on the other hand, was nearly surrounded by a painful suppurating fissure. The breast and surrounding parts of the chest were covered with an ecthymatous rash, which gave considerable annoyance, one or two of these spots ulcerating more deeply. The shin bones felt sore, and she complained of an aching gnawing pain in them. The periosteum over them was slightly knotty at one or two points. The skin on the front of the shin bones presented one or two faint copper coloured spots, resembling *lepra venerea.* She suffered also from a sensation of bearing down, and had a pretty copious discharge of almost colourless fluid from the vagina, attended with sensation of heat and irritation in the passages. She had had no connection with her husband since about the third month of pregnancy, and these symptoms only began to manifest themselves about a month after the birth of the child.

As the symptoms with which mother and child were affected gave reasonable grounds for concluding that they laboured under secondary symptoms of syphilis, the husband was examined, with the view of seeing whether he laboured under any symptoms which might be communicated to the child by kissing. But the only symptom which he presented was several distinct spots of a coppery colour, undoubtedly *lepra venerea,* over the ulnar bone of both arms, and over the tibia of both legs. His voice was slightly husky, and his throat slightly painful during deglutition, but, with these exceptions, not a trace of other syphilitic affection could be discovered.

The affection in the husband was sufficient to show that he was still labouring under syphilitic secondary symptoms, though of a very mild nature; and the only accountable manner of its reaching the child and mother seemed to be the communication of infection through the father's lips in kissing his child, and the child's mouth conveying the infection to the mother's breasts. The symptoms were rapidly subdued in husband, wife, and child, by adopting the appropriate remedies for secondary syphilis, and all are now healthy.

In all these cases, one circumstance struck me as worthy of note, yet apparently inexplicable; and that was the extreme severity of the symptoms in the secondarily infected individuals, while the person primarily infected suffered so triflingly from the secondary symptoms. It appeared in each case as if the primary disease had, to a great extent, steeled the person against the secondary form of the complaint; which, however, he was able to communicate in all its worst form to a person who had not previously suffered from it in its primary form.

These three cases, then, appear to prove that in certain circumstances secondary syphilis is capable of being communicated to the healthy, though the secondary symptoms in the person who communicates the infection may be very slight.

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ART. VI.—*Different Chemical Facts applied to Physiology.* By M. BARKESWILL. (Journal de Pharmacie. February 1850. P. 114, 3ieme Serie, 9 annee, T. xvii.)

THE facts which form the object of this Note ought not to be published in an isolated form. Some of them belong to a *Memoir upon Fermentation*, the first part of which I expect to be able to give very soon; others pertain to a series of researches, of which M. Bernard and I have already made known a certain number of results, in communications made together, or separately by one of us. The circumstance which induces me to extract from these unpublished memoirs the following observations, is the announcement which I have seen in the *Journal de Pharmacie*, of the discovery of sugar in the white of egg. This fact, which I had observed previous to the publication which M. Bernard and myself had addressed to the Academy upon the presence of sugar in the liver, is known to M. Pelouze, M. Dumas, and M. Thenard. It was too intimately connected with those which I had observed, in my work upon Fermentation, for me to believe that I could detach it from the memoir, so much more as it lost a great deal of its importance, in consequence of our publication upon the presence of sugar in the liver.*

I am far from thinking that the knowledge of this result could have come to any one otherwise than by his own experiments; but so far as I would believe it unjust to accuse the author of spoliation, so far do I think proper for me to reclaim at least the simultaneous fact of discovery, and to record at present those facts which I have observed, which are known to all my friends, and which indeed could not, as the first part, escape the investigation of chemists; for, like that, they relate to albumen. The others I reserve for the publications which I have above announced.

1. *Of Sugar in the Egg.*—From the numerous experiments which I have made in the laboratory of M. Pelouze, it results that white of egg contains sugar. The proof of this is obtained in the following manner. White of egg is put into a mortar, and five or six times the volume of alkohol, at 40°, is added; the whole is mingled; the coagulum is placed upon a cloth; the liquid obtained by filtering is subjected directly to the reagent for sugar, the preparation of which I have given,—namely, alkaline, tartrate of copper, and potass. More simply, the experimenter may subject the albumen to the action of test-liquor. To this method it may be objected, that other substances besides sugar possess the property of reducing the binoxide of copper; and several of these I have myself specified. Such are uric acid, allantoine; but I have not confined myself to this character, I have subjected the saccharine liquid derived from the egg to the action of beer-yeast; and immediately this liquid has undergone fermentation, disengaging carbonic acid; and from the fermented liquor I have obtained alkohol. As doubt of the correctness of this statement might be entertained, considering that alkohol was employed in the preparation, I operated directly upon the mother waters of albumen, coagulated by the aid of heat, purified by the acetate of lead, and separated by sulphuric acid from oxyde of lead in excess.

As fermentation, with disengagement of carbonic acid gas, and the formation of alkohol, left no longer any doubt, I concluded that sugar is present; and as the fermentation is immediate, I did not even doubt that I had to deal with cane-sugar, and not with milk-sugar, which, indeed, show the same chemical results to the reaction of oxyde of copper, but differ in their chemical actions with ferments. In order, however, completely to elucidate this question, I endeavoured to obtain the sugar isolated and crystallized. Here my results are no longer in harmony with those which I have related; I have not succeeded, as the author whom

* Edin. Medical and Surgical Journal, Vol. lxxii., p. 483. Edinburgh, October 1849.

I quote, in effecting crystallization in the sugar. Probably the quantities on which I operated were not sufficiently considerable. However it may be, I have been led to establish this curious fact, that the sugar underwent diminution rather than augmentation by being previously concentrated. This phenomenon I ascribed to the presence of an alkali which, in the process of concentration, modified the sugar; and this inference has been confirmed by experiment.

2. *Causes of the Alkaline State of the White of Egg.*—Much has been written upon the causes of the alkaline or acid state of the animal and vegetable liquids, and especially on that of albumen, whether from the egg or from serum; and the different authors have often contradicted each other. The character of the persons who have made these inquiries permits us not to call in question their assertion; and it is only in the circumstances in which they are placed, that the cause of these differences must be sought. In point of fact, we comprehend equally well that the mother water of coagulated albumen, supposed to be free from carbonates, contains some, in consequence of the destruction of a salt of soda, by the mere circumstance of concentration; or, indeed, that the same water containing a carbonate before concentration, may contain more of it after reduction, in consequence of the destruction of this carbonate, whether by alteration of an organic matter in the air, which is exactly the case of grape-sugar, or by the formation and vaporization of carbonate of ammonia. The manner in which I operated is the following.

I brayed a white of egg with absolute alkohol; I filtered the liquor, in which I made to pass a current of hydrogen gas, and which I had introduced into a flasket, stoppered with emery, which it filled to three-fourths; I finished filling the flask with solution of baryta, and then left the substances to themselves. On the following day there was formed a precipitate, which, washed by decantation with boiled water, and introduced into a small tube, was dissolved with effervescence in acids,—a manifest character of the presence of a carbonate.

It may be said that this experiment furnishes no absolute proof, considering that the addition of alkohol may have singularly modified the nature of the compound which takes place in a number of instances. Thus, for example, if we had at the same time in any given liquid an acid phosphate of soda and of carbonate of lime, dissolved in carbonic acid, the addition of alkohol in such a liquid would disengage carbonic acid, and united would give rise to the formation of phosphate of lime, and of carbonate of soda,—products which certainly are not previously present in the liquid.

But, on the other hand, nothing prevents us from admitting in the white of egg the presence of carbonate of soda, when we know that this salt may exist in the blood in very large proportions, and certainly when, for instance, the water of Vichy is employed; and I think we may consider it as at least very probable that albumen contains carbonate of soda.

I have said above, that the sugar disappears when the solution is concentrated hot. This fact admits of an explanation quite naturally, if we admit the presence of carbonate of soda in the albumen. It is indeed well known what a perfect action the alkalis exert upon sugars of the second kind, when in contact with air and at a high temperature. I add, that the sugar disappears spontaneously; it is further indispensable, when we wish to ascertain the presence of this article, to experiment on a fresh egg, or at least to precipitate by means of alkohol the albuminous solution.

I have in vain sought for sugar in the yolk; and I have not found it. Should it be inferred from this that the yolk is not secreted by the same organs as the albumen, or that the destruction of sugar is more rapid than in the yolk? The solution of this question will be found in another essay. It is further rather physiological than chemical. Neither have I found carbonate of soda in the yolk. This circumstance was to me astonishing; since I had *a priori* ascribed to this salt the emulsive property of the yolk, and I had expected to find it in considerable quantity. I was consequently led to seek in the yolk a principle analogous, if not identical, to that contained in the pancreatic fluid, the emulsive property of which had been of late years established by M. Bernard.

3. *Emulsive Matter of the Yolk of Egg.*—A very fresh yolk I treated with ether free from alkohol; and thus separated from it an ethereal solution of oil, which floated uppermost. This dense liquid, separated from the oil and filtered, possessed the emulsive property in the highest degree; it thus made an approach to the pancreatic juice.

Of its leading properties, though carefully studied, I can at present say nothing positive; yet I may notice one of its most curious characters. Placed in contact with amygdaline, it causes the transformation of this substance as emulsine would do. This character, which at first sight seems surprising, has nothing which should cause astonishment. It is a long time since M. Colin has proved that the different sulfo-azotized matters of the organism possess the property of exciting the alkoholic fermentation. MM. Pelouze, Gelis, and Fremy, have proved that all of them may give rise to the viscous fermentation. What conclusion are we to deduce from these facts, if it be not that the different transformations are owing to peculiar ferments, and that these peculiar ferments, being principles not yet defined, may all be formed indifferently according to circumstances, by the decomposition of some one of the sulfo-azotized matters of the organism? This is an inference which I shall further prove in my work upon Fermentation, and which is already proved by the joint observations of M. Bernard and myself, upon the saliva and the gastric liquor. One point which appears to me most deserving of remark, is the simplicity of the means employed by Nature, which, in animals as in vegetables, proceeds in the same manner, and places beside amylaceous and fatty matter, vegeto-azotized matters destined, by successive alterations in the given circumstances, to form ferments capable of dissolving starch and converting fat into an emulsion.

4. *Acid of Egg.*—In the course of my researches I have had occasion to operate upon very fresh eggs. I endeavoured to ascertain if the yolk be or be not acid; I never found that turnsol paper became green in a recent yolk, even at the moment when the egg was broken; but I often observed this character when the egg was left some moments in contact with the air. In like manner I never found fat acids in the fresh egg recently broken, and I have found them in the egg left in contact with the air. I inferred that the cause of discordance, which is found equally among all experimenters, depended on this circumstance, that they were placed in different circumstances, either as to the progress of the experiment, or by the temperature and the time of the experiment.

This easy acidification of the yolk of egg is in like manner found in the pancreatic liquor in the presence of fatty bodies. But in this case also the character which M. Marguerrite and myself have established, with M. Bernard, is manifested only when the operation takes place without the animal body, and in contact with air; for within the body, fat in emulsion, which is absorbed by the vessels, is in no way acid.

Chemists have established the fact, that the acid which is formed in this instance is Lactic Acid. With this statement I have not been preoccupied; and if I return to it it, is because it is analogous to that which M. Bernard and I have advanced upon the gastric liquor, and the correctness of which has since that been established. We ascertained that the gastric liquor is acidified by lactic acid; other observers have admitted* that it is by hydrochloric acid. To this I reply, that all of us may be in the right, according to the manner in which the proposition is expressed. In the gastric liquor there are contained lactic acid, hydrochloric acid, soda, and a quantity of base insufficient to saturate the two acids; so that the whole question consists in knowing, firstly, which of the two acids is free, and which is combined; and, secondly, which of them is formed at the moment of secretion from the stomach? If it is the product of the lactic acid, which is mixed with sea salt? If it is the product of hydrochloric acid, which is mixed with a lactate?

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* Prout, Children, Tiedemann, Gmelin, &c.

In my opinion, the acid which is formed is the lactic. Meanwhile, this acid, when placed in contact with sea salt, forms a mixture which may in certain instances present the properties of hydrochloric acid. The solution which I give of the first question is supported, it is true, by no positive fact, except that of the experiment itself. There is always more acid than is necessary to saturate the base, and in all instances we find we isolate an acid which possesses all the properties of lactic acid, and which does not render turbid the salts of silver. This lactic acid is formed elsewhere in the economy. It proceeds from the fermentation of sugar; and the experiments performed in common by M. Bernard and myself prove that the blood of animals, at least animals with warm blood, uniformly contains sugar, even when it has received no vegetable matter; and nothing appears more simple than to think that this acid is formed at the very moment at which the gastric liquor is secreted, and that, by a fermentation as rapid as that of amygdaline by the emulsine, which, it is known, is formed at the very instant of contact.

There is further an example which I shall borrow from our experiments, and which, if I am not deceived, proves to a certain degree analogically the fact of the formation of acid at the exact moment of secretion. If we cause an animal to swallow urea, or if we inject it into the blood, it is absorbed, and it is without alteration added to that which is normally found within the bladder.

This fact being established, if we remove the kidneys from an animal, if we thereby induce suppression of the secretion of urine (and we are indebted to MM. Prevost and Dumas for this experiment, which M. Bernard and I subsequently repeated, and made the subject of comment), we observe that urea is accumulated in the blood; but how considerable soever be the proportion which we can extract from the blood, this is far from accounting for the quantity produced. Now if we inquire by what channel, when the kidneys are removed, the urea may escape from the combination, we find that it is by the stomach, which indeed is filled with liquid. But the urea, which, while in the blood is in the state of urea, is found in this liquid contained in the stomach in the form of ammoniacal salts; it results then that the transformation of the urea takes place at the exact moment of secretion.

The second proposition is the following: Admitting that the gastric juice is acid, because lactic acid is added to it, is it to this acid or to the hydrochloric acid which it eliminates that the properties of the gastric liquid are owing? To this I reply, that it is of little moment, considering that the experiments of M. Bernard and myself have proved that all the feeble acids behave in an analogous manner.

But I thought it possible to enter further into the question. I think that the following experiment throws some light,—I shall not say certain, but probable,—upon the hypothesis, that it is lactic acid, and not hydrochloric acid, which is in a free state in the gastric liquid.

M. Payen has shown that starch, which is so easily converted into sugar by the mineral acids, even in a diluted state, does not undergo this conversion by the action of the organic acids. Upon this experiment I support my proposition. I made of hydrochloric acid of commerce from three to four drops in ten centimes; I then placed separate portions of the solution in two tubes. To the solution in one tube I added sea-salt; to that in the other, acetate of soda; and into both I poured very clear paste in equal quantity; and both I maintained for twenty minutes at the temperature of from 38 to 40 degrees = 100·2° and 104° Fahrenheit. At the end of this time I observed that the starch no longer gave a blue colour to iodine in the tube which contained sea-salt, while it did give a blue tint to the portion contained in the tube with the acetate of soda. From this experiment I concluded that the hydrochloric acid was free in the first tube, while in the second it was combined with soda in substitution of the acetic acid, which was alone free in the liquor.

5. *Causes of the Disappearance of the Sugar of the Egg.*—I have in all instances found sugar in the egg. I have not had the means of operating upon the eggs of the carnivorous birds; and the trials which have been made to obtain eggs from fowls fed exclusively on animal food have given no result. This idea, nevertheless, I have not abandoned, and I trust to return to it.

I shall not then speak here of the case in which sugar is naturally wanting; but of its disappearance as shown by experiment.

I have said above, that when we seek for sugar in the residue of the evaporation of the mother-liquor of coagulated albumen, we find it not, or we meet only with minute quantities of it. I have intimated that the destruction of sugar ought to be ascribed to the simultaneous presence of carbonate of soda and air. Indeed, direct experiment has taught this fact; the sugar of starch disappears by the action of the air, under the influence of alkalis. This fact is very important; it proves how in one analysis two products may disappear in mutually destroying each other, and how we may meet with principles which are not previously present, and which are formed even in the course of the operation; finally, it explains, I think, differences noticed among the experiments of different chemists upon the presence of an alkali in the blood.

Sugar may undergo a fermentation,—a spontaneous destruction. When white of egg is exposed to the air, it disappears so much more rapidly, as it is more diluted; should we ascribe this phenomenon to the presence of air? I think not. In truth, the egg, even within its shell, receives the impression of the atmosphere. It is requisite, above all, to pay attention to the state of dilution; for, I repeat, the fermentation which takes place slowly in albumen in the natural state, is infinitely more rapid in albumen of egg diluted with water. I could cite several examples of analogous instances, in which fermentation is favoured by dilution. Thus, for example, the water of gooseberries sugared ferments on the second day; while confections of gooseberries, which differ from the water only by concentration, are preserved from one year to another.

These confections, nevertheless, do not in all instances remain unalterable; and the mode of their alteration, if it be closely observed, is a proof of the influence of dilution. When confections of this kind are left in a place at once warm and saturated with moisture, their surface very soon becomes liquid, and gradually the entire mass is liquefied more and more rapidly; and the alteration, though slow in evincing its presence, advances with extreme velocity. This phenomenon is owing to this circumstance, that in proportion as the alteration manifests itself, the posture of the confection being modified, is converted into a matter, which retains less water in combination (metapectic acid), and because thus consequently the water is set at liberty, modifies the portions of the confections not altered, and thus accelerates the metamorphosis.

This effect is only remarked in a place constantly moist; otherwise, in ordinary circumstances, the paper and the sugar which covers the confections, is sufficient to remedy, by their hygrometrical properties, the alternations of moisture and dryness.

The influence of dilution being, I believe, undisputed, it remains to determine the mode in which it acts. Is its object simply to allow the air to circulate more easily in the liquid, or does it not happen, that by the mere single fact of concentration, the ferment, or the substance which is to produce it, is insoluble in the vehicle, unless it is diluted with water, and, by the sole circumstance of its insolubility, is protected from all decomposition?

This question is invested with high importance, especially in the study of the chemical phenomena of life; and I have accordingly endeavoured to resolve it. Among a great number of experiments made with this object, I shall describe the following, which to me appear to afford a satisfactory solution.

If we bray in contact with the air a moist almond and some sugar in powder, with a sufficient quantity of water to render the mixture fluid, but not to dissolve all the sugar, and if to this liquor be added amygdaline, continuing the operation of braying, we obtain not the odour of the bitter almond, which is developed in the contact of the emulsine and the amygdaline, and yet we operate with the air in contact and incessantly renewed by the braying. The phenomenon being established as a fact, we may cause the development of the odour with the greatest energy, by adding pure cold water, that is, by diluting the mixture.

I have selected as an example sugar, because it is employed by every one. I might have employed other reagents; I should have equally been able to put in play another ferment, and another fermentable substance. Thus, I have ascertained that all the ferments and the organic matters of the number of those specified by M. Colin, as giving rise to ferments, especially to the alkoholic ferment, are in this situation.

Albumen appeared to form an exception. It is in truth not precipitable in its solution by sea salt, even when in great excess. This circumstance was very unpleasant; and it might even to a certain extent be turned as an argument against me, by stating as an objection the preservation of animal food by salt. But I very soon saw that this anomaly was only apparent. If indeed it is true that albumen in its ordinary state is not precipitated by sea salt, it is sufficient to cause it to undergo a slight modification, in order that it become precipitable. All that is required is to saturate its alkali by a trace of vinegar or of lactic acid; for this circumstance is exactly that which is always presented. It is well demonstrated that the first degree of putrefaction in albuminous solutions, such as soup, is evinced by the presence of acescence. We must not, however, confound this precipitation of albumen with the coagulation effected by fire or by alkohol. In truth, the coagulated matter formed is soluble in water. This anomaly, which albumen exhibits in the presence of sea salt, is no longer found in the presence of other precipitating agents. Thus, for example, the sulphate of soda precipitates albumen when the albumen is alkaline; the same salt precipitates not only the ferments, but gelatine, starch, and gum.

When we repeat the experiment of the precipitation of albumen by means of sulphate of soda, it is proper to observe a precaution in order to obtain a result which may leave no sort of doubt. This is to maintain the albumen at a temperature of about 33 degrees = 91·2° Fahrenheit, the maximum of the solubility of sulphate of soda. On this side of, and beyond this limit, the precipitation is no longer complete; so that the solution of albumen, fully saturated with salt at 20 degrees, becomes turbid when the temperature is carried to 33 degrees, = 91°, 2 Fahr., but becomes afterwards clear when this limit is passed. This experiment is one of remarkable exactness. It ought to be taken into consideration in the analysis of the blood. Direct trials have proved to me that the globules were not the only matter eliminated. I shall, however, return to this question; and I shall show, I hope, in what manner we may, by the assistance of dilution, or of concentration respectively, ensure the departure of certain principles of the blood, either in an isolated manner, or by a series of analogues.

In conclusion, I conceive that I have, in the preceding observations, established the truth of the following propositions:

1. That sugar exists in the white of the egg of the common fowl.
2. That the white of egg is alkaline; and that its alkalinity is owing to carbonate of soda.
3. That the yolk of the egg contains no alkali, and that its emulsive property belongs to a product analogous to that of the pancreatic liquid.
4. That the yolk is not acid, and that it becomes so in consequence of alteration.
5. That (by depression) the acid reaction, and the properties of the gastric liquid, are owing to an organic acid, and not to hydrochloric acid.
6. That the alkali and the sugar of white of egg might disappear by destroying each other in the experiment of demonstration, and thus explain the discordance in the results obtained by different methods of experiment.
7. Lastly, That the alteration of the albumen of egg, and of all analogous matters, is so much more rapid, in proportion as these matters are in a more diluted state; and that the cause of the greater or less rapidity in alteration is owing, all other circumstances being equal, to conditions which, more or less, favour the solubility of the ferment.

ART. VII.—*Essay on Idiopathic Convulsions of the Face.* By M. V. FRANCOIS, Titular Member of the Royal Academy of Medicine of Belgium. [Memoirs of the Royal Academy of Medicine, Belgium. Volume First. Brussels, 1848. P. 23. Part Second, and Conclusion.] (Abstract.)

SINCE I communicated to the Academy the first part of this memoir, imperfect as it is, in the course of a visit which I made to London at the close of September 1847, I procured the work of Dr Marshall Hall upon the Diseases of the Nervous System, published in 1841, and which consists of memoirs which this physician has read to the Royal Society of London.

Upon my return, I lost no time in becoming acquainted with the passages of this work relating to the local diseases of the nerves; and I have great satisfaction in finding described in it, not exactly cases similar to those to which I have solicited the attention of the academy, but facts which are connected and closely allied to these cases, which belong to the same family, which take place in the same organs, and the existence of which I had been led by induction to believe possible, though I had never met with them in actual practice. As these facts are of that nature that they are calculated to throw much light upon the subject of my memoir, I think it will be serviceable to reproduce them in this place;—remarking, however, that, in order to understand properly the English author, it is necessary previously to have some knowledge of his peculiar views on the Nervous System, which are given for the most part in his first memoir, a French translation of which M. Gariel has given, inserted in the ENCYCLOGRAPHIE OF MEDICAL SCIENCES for March 1840. As the seventh chapter of this work, which treats of the diseases of the nervous system in adult age, and which relates particularly to the subject now under investigation, has not been translated, I shall supply this defect to the best of my ability.*

The three cases which Dr Marshall Hall relates, and which are by him arranged under the head of Centrifugal Diseases of the Nervous System, belong to the class of Spasmodic Diseases of the Nerves of Motion, and are by him designated under the name of Spasmodic Tic. These instances I shall here adduce in the order of the analogy which they present with my own observations.

CASE THIRD.

" George Jefferson, aged forty, formerly a lamp-lighter, now a seller of fruit in the streets, was affected three years ago with general rheumatism, in the midst of which this singular affection of the muscles of the face came on.

" The two sides of the face are not alike; the left is nearly natural, but the right is affected with spasmodic contraction; the chin is drawn to one side, and dimpled; the right angle of the mouth is drawn downwards; the right eye-brow is higher than the left. Sometimes there is a little rapid spasmodic action of the muscles.

" When he is told to shut the eyes promptly and forcibly, the distortion is tenfold; the right eye is drawn and only partially closed; the right angle of the mouth is drawn spasmodically downwards; the nose and chin are drawn to the right side.

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* It is almost unnecessary to remark that the cases are here given from the work of Dr Marshall Hall itself.

"He laughs and bites perfectly on the left side. On attempting to open the mouth wide, it is obviously *tied* by the muscles of the right side. He cannot whistle; in the attempt to do so the mouth is drawn to the right side.

"He takes snuff through both nostrils indifferently; on sneezing, the left side of the face is chiefly distorted.

"The right side is a little benumbed in feeling; it is also colder, after exposure to cold, than the left.

"Besides these two cases, I have seen several others; in one there was a defect of vision, with the spasmodic tic; in another, the tic was confined to the outer portion of the orbicularis. The former was of the most extreme character; the face being exceedingly distorted on each spasmodic attack. The latter was comparatively slight. The former probably arises from disease of the facial nerve *within* the cranium,—the latter appears confined to that branch of the facial, *exterior* to the cranium, which supplies the orbicularis.

"The *causes* of this affection are the usual causes of inflammation: the most frequent is exposure to a keen wind, either extremely cold, or with rain, or sleet,—a *coup de vent*, as it is termed.

"The remedies for this disease are unknown; in the severer cases just mentioned, aperients and mercury have been fully tried in vain. I have proposed local depletion and counter-irritation, by means of the cupping instruments.

"Recently I have seen great benefit accrue from the use of fomentations, and of a sharp liniment."

CASE FOURTH.

"Lady S———, after exposure to severe cold, became affected with *paralysis* of the *right* side of the face; the *right* eye-lids could not be closed, the features were drawn to the *left* side, the food gathered into the *right* side of the mouth during mastication, and the saliva flowed from the *right* angle of the mouth; in process of time, all is changed; the *right* eye-lids not only close on an act of volition, but closed spasmodically; the face was drawn *to* the *right*, especially on laughing, and during mastication on the *right* side, and a dimple formed on the *right* side of the mesial line of the chin.

"It was supposed that the disease had affected the two sides of the face in succession,—that it was, at the first, paralysis of the right facial nerve, and then of the left. But the state of the eye-lids sufficiently denoted that the change was not from one side to the other, but from paralysis to spasm of the *same* side: it was always the eye-lids of the right eye which were affected, those of the left being always in their normal condition; at first, these lids could not be closed, afterwards the attempt to close them induced spasmodic action.

"From the misapprehension in relation to this case to which I have alluded, the remedies were actually prescribed to be applied to the unaffected side of the face!"

CASE FIFTH.

"Miss Inman, aged nineteen. *Two years ago*, in the winter season, the face became affected, during the course of one night, in the following manner: all the muscles of the right side of the face were drawn into a state of spasmodic contraction; the sensibility of the skin became much impaired, the contact of an external object inducing a feeling of numbness; there were a degree of swelling, and considerable pain; and a sense of rigidity was felt in the muscles of the right side of the neck.

"The muscular contraction was permanent, and very considerable; the right angle of the mouth was drawn downwards; the retraction of the integuments usually observed extending from each nostril obliquely downwards, is, on the right side, very deeply marked; on the left it is seen in the natural state. The point of the nose is drawn considerably towards the right side. The right eye-brow is drawn a little lower down than the left one; and two small dimples, the effect and evidence of muscular contraction, are seen immediately above it. A dimple in the chin is also distinctly marked, and is drawn considerably to the right of the mesial plane of the face. Articulation was, at first, very indistinct, and is still so in some degree; the letter *S*, especially, is pronounced with difficulty, and participates in the soft sound of *th*. There is no difficulty in deglutition; but considerable inconvenience occurs during mastication, from a tendency of the bolus of food to pass and collect in the right side of the mouth. On closing the right eye, a degree of tightness is induced and felt at the right angle of the mouth; this tightness is *seen*, even when the patient speaks with the right eye perfectly closed. On drawing down the right angle of the mouth, by an effort of the muscles of this part of the face, the upper eyelid of the right eye is also drawn sensibly downwards, and the eye is partially closed. In the first instance the eye was closed with difficulty. This fact, with the date, prove that it was originally *paralysis*. It is now *spasm*.

"The state of contraction of the muscles is seen much more distinctly, and the deformity induced is much greater on speaking or laughing, than when the patient is in a state of tranquillity.

"At present, the contraction of the muscles is much less than at first; the sensibility is perfectly restored. The diminution of the symptoms took place during the administration of electricity, the operation of blisters, and the exhibition of an emetic, followed by purgative medicines.

" This affection was considered by the patient as an effect of cold. The swelling and pain were deemed an attack of toothache, but without reason, as there is no decay of any of the teeth. Before and about the period of attack, pains were experienced in both arms and wrists, and were considered rheumatic. During two years, previously to the accession of the affection described, this young lady had experienced some general indisposition, having been feeble, nervous, and subject to difficulty of breathing and palpitation of the heart. The catamenia had been somewhat irregular. The ankles were affected with œdematous swelling in the evening of each day."

These cases, though given with little detail, are to me interesting on more than one account. I shall observe, at first, that all of them refer, like the cases which I have recorded, to affections of the facial nerve, and very probably also at its point of emergence. For if the lesion of this nerve had existed at a point more internal, that is to say, within the petrous portion of the temporal bone, or within the cavity of the cranium, there would have resulted permanent contractions of the muscles of the palatine velum, of the digastric muscle, and of the stylo-glossus,—contractions which an observer so accurate as Dr Marshall Hall must have recognised, and which in all the cases would have occasioned inconveniences sufficiently considerable to be the subject of complaint by the patients. To these particulars I attach great importance, because I conceive much depends upon establishing the inference, that the lesion of the facial nerve actually commences only after its emergence from the *stylo-mastoid foramen*, where it becomes superficial.

In the individual who forms the subject of the first observation, the disease manifested its presence only during the acute state of an attack of muscular rheumatism. The author does not state whether it has modified this last disorder. In all cases it takes place, that, although the disease consists in permanent contractions, there supervened, nevertheless, in different points, rapid convulsive movements;—an important circumstance, which tends to connect this case with the one given by me by a very close bond, and which seems to demonstrate that tonic convulsions are only a degree greater than those observed in my cases; in one word, that, whether tonic or clonic, they are fundamentally only one and the same morbid state. In the case of George Jefferson there was on the convulsed side a little anæsthesia, which shows that the trifacial nerve was affected at the same time as the facial nerve, but to an extent less deep. Unhappily, we are left without information among other matters as to the termination of this complex instance of neuropathy.

The second case from Dr Marshall Hall presents this curious circumstance, that to the complete idiopathic palsy of the face, there succeeded in process of time, spasms continued or irregular, which leads Dr Marshall Hall to admit that palsy is a special pathway to convulsion. This opinion appears to me to be erroneous; and I expect to be immediately able to prove that it is so.

The third case from Dr Marshall Hall is complicated; but it is to me not less valuable on that account. In consequence of the impression of cold, we observe supervene simultaneously on the same side of the face a painful catarrh, a loss almost entire of sensibility of the skin, and a continued contraction of all the muscles on the same side of the face. In course of time, and undoubtedly in consequence of the treatment put in use, the anæsthesia was diminished, then disappeared, and the muscular spasm was abated in violence, but it nevertheless continued; it even underwent an augmentation under the influence of the will. The author states that in this case, a spasmodic attack succeeded a paralytic seizure. To this opinion I cannot assent; because it is opposed by the progress and order of the development of the phenomena, such as they are described. In this case the accidents have coexisted; that is to say, the trifacial nerve, the seat of the palsy of sensation, was affected at the same time as the facial nerve, the lesion of which gave rise to the muscular spasm. As to the catarrhal attack, which showed itself at the same time as the previous phenomena, it occupied other textures; and its presence concurs to demonstrate in my opinion the intensity of the cause of the disorders observed.

In the first instance, the disease showed its presence during the course of an attack of muscular rheumatism; and we know that rheumatism is a morbid state to which are very generally ascribed facial hemiplegia and neuralgic disorders. We may then connect with it also the clonic and tonic convulsive spasm, an etiological view, which may be regarded as supported by the instance of the female patient Piergues given in the former division of this memoir.

In the other two patients of Dr Marshall Hall, the disorder of the cheek had succeeded to an impression of cold, in a manner too visible to prevent us from admitting that there was between them the relation of cause and effect. But while Miss Inman was attacked with a tonic spasm, accompanied with anæsthesia, Lady S——— suffered under a facial hemiplegia, afterwards followed by a spasmodic attack. Now practitioners have been long aware, that the direct action of cold is the most ordinary cause of idiopathic hemiplegia and of neuralgic or hyperæsthetic attacks on the face;

we have seen that it is equally so of convulsions and of anæsthesia. We are therefore naturally led to observe, that the impression of cold may give rise to the whole series of diseases to which the nerves of the Fifth and the Seventh Pairs are subject, that is to say, to Anæsthesia and to Hyperæsthesia or Neuralgia as to the Tergeminal* nerve which is sensiferous; to Palsy and to Convulsion, either tonic or clonic, as to the facial nerve which is motific; or, in short, to suspension and exaggeration of function in the two species of nerve. The same cause, the same effects with regard to the respective destination of these two nerves are recognized. Can we not conclude from this identity of causes, which act upon nervous branches placed in the same anatomical conditions, on an identity of nature in the action produced? It is assuredly not possible to determine positively, and in an exact manner, the effects which cold produces upon the facial and tergeminal nerve; but we may say that everything authorises us to presume, that this physical agent exercises its first action upon the expanded nervous extremities, upon the points in which, arrived at their final divisions, the nerves are incorporated with the organs to which they are intended to communicate nervous energy, that is to say, on the skin of the face and the subjacent muscles in neuropathic disorders; then successively twigs upon the branches, and even upon the trunks of the nerves, when the cold is intense and continued; so that the disease proceeds from without inwards, from the extremities and periphery to the centre, and that it stops only at that point at which the cause has not been able to act, at which the nerves escape from its influence, either because they sink into the substance of the tissues, or because they are protected in a different manner, as for instance the helix of the external ear, by a portion of the clothing or some other means.

It is certain that in thus viewing the mode in which cold operates,—and this the daily observation of facts must cause us to admit,—the most of the phenomena of the neurotic diseases are admirably well explained.

1. Their different degrees of intensity.
2. Their exact limitation to certain nerves, and to certain parts of nerves.
3. The greater relative frequency of neuralgic disorders.
4. The integrity of the trunks, and even of the nervous branches, between the roots and the point of emergence of the nerve.
5. The very prolonged duration of anæsthesia and hyperæsthesia of the face, without the other tissues, which are supplied by the Tergeminal Nerve, undergoing the slightest derangement.

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* It is to be observed that the names TERGEMINAL, TRIFACIAL, and FIFTH PAIR are all applied to the same nerve.

6. The co-existence of palsy or convulsions of the face with its anæsthesia or its hyperæsthesia, as affections of little severity, and most frequently admitting of cure.

7. The success which is generally obtained from treatment entirely local.

It cannot be questioned that these proofs in favour of the present mode of viewing the operation of cold in the production of facial neurotic attacks, are forcible and plausible. I am not ignorant, that however powerful any given cause may be, there is further required a special disposition of the subject and of the part, in order that one particular morbid phenomenon should manifest its presence and not another. Anæsthesia, for instance, rather than Neuralgia, Palsy rather than Convulsions. But this etiological condition is common to the majority of diseases general or local; and it in no respect diminishes the value of the explanation here given, which may then be converted into a precept, and even into a law. Here, however, let us pause. The desire, otherwise legitimate enough, of constructing a theory which may give the key to the explanation of phenomena till now misunderstood, must not draw me into a false path, and lead me to distort and mutilate facts in order to subject them to one single rule. I dissemble not the fact, that the inquiry into the mode in which operate the exciting causes of diseases is embarrassed with difficulties, and is not less mysterious than that into the mode in which act the remedies which are employed for their cure. I do not, therefore, profess the desire to explain everything; and I regard it sufficient if I am able to raise one corner of the veil which covers from our sight the thousand secrets of life. That cold operates in the manner I have stated, in the great majority of the instances of facial neuralpathy, is more than probable. I admit, however, that we do not thus afford the explanation of all their circumstances; that we do not comprehend, for instance, how it happens that idiopathic convulsions, and especially idiopathic palsies of the face, occupy, so to speak, always at the same time, all the muscles subjected to the influence of the facial nerve, when there ought to exist instances in which some of the branches only of this nerve are attacked by the producing cause, as happens often to the Tergeminal Nerve, unless we admit that these neuortic attacks are manifested only when the cold is sufficiently intense, and sufficiently long continued to affect at one time all the divisions of the facial nerve,—an opinion strictly capable of being maintained, but which might be only an hypothesis. Lastly, let us still admit, that in order to generalise the explanation here given, it would be requisite that all the Neuropathic affections of the face depend on causes acting in the manner of cold, that is to say, from without inwards, from the extremities towards the centre; and if it is not doubtful that this agent gives rise to palsy of the face and neuralgic affections, in the greatest number of cases in which their etiology has been ascertained, it appears equally to be alleged, that they result from other causes, such as rheumatism, certain affections of the mind, an impetiginous or tetter-like metastasis, and similar disorders, without its being possible for us in these instances to suspect the mode of action, although we know, that in general they began to be exerted only at the points at which the nerves emerge and become superficial.

In proof of the inference that cold is the most common exciting cause of neuralgic attacks in general, and paralytic attacks in the face, I may refer to the authority of the principal authors who have written on these disorders, and particularly, Joseph Frank, Chaponniere, Montault, Dezeimeris, Jobert, Ollivier, Jolly, P. Bernard, Fleury, Monneret, Valleix, Todd, James Copland, and Marshall Hall; by all of whom cold is assigned as the most ordinary cause of these disorders.

Regarding what I have now said upon the analogy of neuralgic disorders, and I include the neurotic disorders of the face, I willingly repeat, with M. Valleix, that this branch of pathological inquiry has been much neglected to the present time, and that in this part of their history there is a chasm, the disagreeable effects of which we are feeling at this moment, since we can scarcely speak with certainty except upon one single sort of causes, namely, the application of cold, or exposure to that agent. Of its manner of acting we have explained only the superficial side, if I may use the expression,—that which is coarse and apparent; for as to its intimate effects, its modifications, whether material or vital, which this physical agent induces in the nerves, they escape, and will probably always escape, our observation. Nevertheless, when we examine phenomena, closely and carefully investigate the nature of the disorders which take place in the functions of the nerves of the face, in the instance of neuropathic attacks, it is impossible to avoid remarking that in this case cold seems to act after the manner of a physical or chemical irritant, its first and most simple effects giving occasion to clonic convulsions, then to tonic convulsions in the facial nerve, to neuralgia in the tergeminal nerve, and its final effect being to suspend, or even abolish entirely, the function of these two nerves. These disorders, therefore, these symptoms, which are regarded as purely dynamic or vital, produced by the different causes already enumerated, of material, organic, or structural alterations, may in like manner produce them, and this with a similitude so close as to certain neuroses of the face, that it is often a matter of considerable difficulty, at first sight, to determine their actual origin.

If it were my intention to trace the complete history of the idiopathic Neuropathies of the face, this would be the place to establish the diagnosis of these diseases; to specify the characters by which they are distinguished from the morbid phenomena occasioned by organic disorders of the nerves, both in the origin and in the course; phenomena which, in truth, form a particular class of diseases which have not been sufficiently separated from the idiopathic neuropathies, which are primary and essential in the sense attached to these terms. For example, we might say that the nervous or other disorders, which proceed from an alteration in any anatomical or material lesion, vary according to the following circumstances;

1. The nature of the disorder or lesion.

2. Its seat being limited or continued, simple or manifold, accessible or inaccessible to touch and to sight; the phenomena in all cases proceeding from this seat, and extending to all the ramifications of the nerve, and always and necessarily advancing from within outwards, from the centre towards the periphery and extremities.

3. That they are always subordinate to the progress of the exciting material nervous lesion; augmenting, diminishing, and stopping with it: the latter causing abolition of function when it has terminated by disorganising the nerve, and being accompanied with phenomena which are varied, when this function is complex, as happens, for instance, to the fifth pair, which partakes at the same time in sensation, in nutrition, in the secretion of the tears, in that of the saliva, of the nasal mucus, and similar processes.

4. That their severity is quite the same as, and proportionate to, the primary lesion, which may be mortal.

5. That the treatment of these nervous affections is especially that of the cause on which they depend.

These characters are surely sufficient to distinguish these symptomatic nervous affections from those which are primary and essential. In general, however, physicians do not make this distinction.

With regard to inflammation of the Nerves of the Face, or NEURITIS, supposing that it exists otherwise than from a traumatic cause, or by the extension of some alteration in the neighbouring tissues, the presence of this disease may be recognised by the increase in the volume of the nervous cord; by the pain which the slightest pressure causes in it, through a space more or less extensive; by the pain following uniformly the direction of the nerve and its principal divisions, and which is ordinarily sufficiently fixed; by the redness often apparent of the part; by a species of local fever; and by the advantages which are derived from antiphlogistic remedies in causing its cessation.

Since I have here spoken of the Etiology of the Neurotic Diseases of the Face, I may add, that the ignorance in which we still continue on this subject has been particularly prejudicial to the treatment of these affections, which is thereby abandoned to hazard and empiricism. This is clearly shown by looking at the long list of remedies, the most contradictory and often the most useless, which have been proposed for the cure and removal of Neuralgic Disorders. It cannot be doubted that an attentive study of the causes, and an estimate of their mode of operation as accurate as possible, would lead to the employment of therapeutic measures, more rational and more efficacious.

I here ought to terminate the memoir which I have the honour to submit to the judgment of the Academy, if I did not feel it to be my duty to rectify a serious mistake which Dr Marshall Hall appears to me to have committed in reference to the order of succession of the morbid phenomena which constitute the idiopathic NEUROSES of the Fifth and the Seventh Pairs of Nerves. This author represents palsy to be the first effect of the lesion of the nerve, and as preceding the pain in the Tergeminal Nerve and the spasm in the Facial Nerve. Then, adverting to the facts which he reports, he expresses himself in the following terms:—

"When the trifacial nerve is injured by exposure to cold, there is at first numbness; afterwards, perhaps, painful tic.

"When the facial nerve is affected by severe cold, there is at first *paralysis*, and the face is drawn to the opposite side; afterwards there is *spasm*, and the face is drawn to the side affected."[*]

His manner of thinking on this subject Dr Marshall Hall founds upon the following principle, which is one of the bases of his doctrine upon the functions of the nervous system, namely, that the first effect of any lesion of this system is to impair and weaken the energy of its functions, and the secondary effect is to produce in them an augmentation or exaltation of energy.[†] "If," he adds, "we divide the spinal marrow in the frog, there is at the first a cessation of the reflex actions with that of the circulation; by and by, these return; after a time, their force is morbidly augmented.

"In injuries of the brain and of the spinal marrow, in man, the same series of phenomena is observed."

I should willingly adopt the opinion of this celebrated physiologist, if the idiopathic neuropathies could be shown to claim their origin from the nervous centres; but in the meantime the contrary is proved to be the fact. The principle maintained by Dr Marshall Hall cannot, therefore, admit of application in this case; and this physician would not have made the application, if, less preöccupied with the greatness and truth elsewhere contained in this principle, he had directed his attention to the seat and the exact limits of the nervous disorders experienced by his patients, as well as upon the nature and the mode of action of the cause to which they are ascribed. It is not my opinion that there is any one order of succession necessarily followed in the development of the constituent phenomena of neuropathic disorders. I think, for instance, that, although there may be many relations between Anæsthesia and Neuralgia, between Palsy and tonic or clonic Convulsion; these are, nevertheless, in certain senses independent of each other. Neuralgia, for instance, is in so small a sense a degree more than Anæsthesia, that it, namely, Neuralgia, does not pass through Anæsthesia, that it is not transformed into Palsy of Sensation, when it gradually diminishes either spontaneously or under the influence of treatment. Finally, it appears to me that Dr Marshall Hall has imperfectly interpreted the facts which he has observed, that he has not taken into account all their circumstances and elements, and he has not rightly applied to them his own principles, which are in other respects very curious, upon the functions of the nervous centres.

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[*] On the Diseases and Derangements of the Nervous System, in their primary forms and in their modifications by age, sex, constitution, hereditary predisposition, excesses, general disorder, and organic disease. By Marshall Hall, M.D., F.R.S. L. and E., &c. London, 1841.

[†] *Ibid.*, page 232, sect. 1385, *et aliis locis.*

Whatever opinion may be entertained of these critical remarks, the three cases which I have borrowed from the English physiologist are in no respect to me less valuable. Associated with my own cases, they at the same time mutually lend to them and borrow from them great authority and force, in this respect, that they form together a body of facts which establish, in an irrefragable manner, the existence of a tribe of disorders, which, having been neither referred to their true seat, nor recognised as peculiar morbid states, remained, as it were, foreign to the science, and were to it accordingly lost. Restored to the position which they ought to occupy, it is hoped that they may become the subject of study and research, which may at length explain the method of treatment required by these disorders, and which is the great object of the labours of the physician. We have already seen that the analogy which the convulsive disorders of the face present, with neuralgic and paralytic affections of the same region, lead us to indulge the hope that electro-magnetism, suitably conducted and modified, may effect their cure.

Lastly, The intimate relations which subsist between these maladies and certain disorders of the Nervous System have made me think that several trunks and branches of the same system may be affected in the manner of the facial nerve. This fact has been already recognised and admitted by Dr Marshall Hall, who, in the work already referred to, has placed in one and in the same class the hemifacial spasm, the spasmodic Strabismus, and some forms of Torticollis or Wryneck. Other nervous diseases, of seat yet undetermined, will probably be at length placed in the same category.

Six months after this memoir had been presented to the Academy, and immediately after the reading of the Report of the Commission which the Academy had appointed, my learned colleague and friend, Professor Schwann, informed me, that he had just received the second part of the first volume of a work of M. Romberg of Berlin upon the Diseases of the Nerves, and that one chapter of this work was devoted to the subject of Convulsions of the Face.* I think that it may be serviceable to state in this place, as a supplement to my memoir, the principal points of this chapter, which is not lengthened, and for a translation of which I am indebted to M. Schwann.

I. During accessions, the patients are able to cause the convulsed muscles to act, neither simultaneously nor in an isolated manner; but they possess the consciousness of the contractions of the whole of these muscles.

II. The general convulsive spasm is susceptible of being decomposed, and affecting only the parts subjected to the action of one single nervous branch, as in the instance of neuralgic attacks.

III. The disease may affect the whole of any nerve from its origin as well as at its divisions. The author saw one case in which the convulsive movements occupied the auricular muscles.

IV. The mimic convulsion may exist alone, or may be accompained with convulsive contractions in the muscles regulated by other nerves; the small root of the tergeminal, the accessory nerve, the cervical nerves, the spinal nerves, and others.

V. Facial Palsy may be transformed into Convulsions.

VI. The disease has its seat in the periphery, that is, the ramified extremities,—or in the centre of the nerve.

VII. The causes of this disorder are,—rheumatism, a draught or current of wind, a reflected irritation, such as is produced in the instance of wounds of the diaphragm, and particularly in the diseases of the Trigeminal Nerve, Tic Douloureux, caries of the teeth, and similar affections; an irritation felt, such as the presence of a grain of sand in the eye; an irritation not felt (and transmitted to the sentient soul†), as the existence of intestinal worms, &c. ; and, lastly, the diseases of the womb, moral affections, habit, imitation. Most frequently, however, the causes of these disorders are unknown.

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* Lehrbuch der Nervenkrankheiten des Menschen. I. Band. II. Abtheilung. Berlin, 1843.

† This is marked within brackets, because it is not exactly correct to say that the irritation is not felt. It acts upon the mucous and muscular coat of the intestines; but of this the mind is not conscious.

VIII. Convulsive Tic is independent of diseases of the brain, excepting epilepsy.

IX. The treatment of the disorders now under consideration is not known. Nevertheless, partial convulsions seem to yield more easily to the action of remedies. In all cases it is essential to examine with care whether the convulsion is a reflected effect, and to ascertain the point of its origin. M. Romberg recommends the solution of borax and continued pressure, exerted by means of a pad conveniently applied. He quotes from M. Dieffenbach an example of convulsions in the muscles of the face in a man aged forty-three years, who, in consequence of a chill, was immediately attacked with a spasm of the *orbicularis* of the eyelids on the right side, and which extended to the whole of the same side of the face. While the wind was from the south these symptoms were abated; but they returned in an intermittent manner. The convulsions came on as soon as the patient wished to shut the eye; nor could he sleep, unless he closed it with precaution and slowly. The spasmodic contractions were suspended during sleep. M. Dieffenbach performed the subcutaneous section of all the muscles of the face by making four successive incisions; and after the lapse of fifteen months, the convulsions, he stated, had entirely disappeared. They were succeeded, however, by a muscular vibration, which, it is said, causes very little constraint to the patient.*

From the summary now given, it is seen that the German author has taken into consideration all the forms of Nervous Convulsions of the Face, whether idiopathic, or symptomatic, or sympathetic. The culminating point of the work of M. Romberg is the almost complete cure of spasmodic tic, by means of subcutaneous myotomy, an operation which has already rendered many services in other disorders, and which is certainly a great resource in the treatment of a disease against which all therapeutic means have been hitherto unsuccessful.†

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* Dieffenbach, Ueber die Durchschneidung der Sehnen und Muskeln. Berlin, 1841.

† When I communicated this fact to the Academy, at the meeting of the 3d June 1843, M. Phillips, favourably known in the medical world by his labours in the department of subcutaneous Tenotomy, recalled to the Academy the fact, that he had, in 1840, stated in his work upon Strabismus, in speaking of subcutaneous sections, that henceforth convulsive contractions, tic douloureux of the face, of the lips, of the eyelids, &c., would no longer be considered as incurable.

Art. VIII.—*On the Use of the Speculum in the Diagnosis and Treatment of Uterine Diseases.* By Robert Lee, M.D., F.R.S., Fellow of the Royal College of Physicians, Physician to the British Lying-in Hospital, Physician-Accoucheur to the St Mary-Le-Bone Infirmary, Lecturer on Midwifery and the Diseases of Women and Children at St George's Hospital. (Medico-Chirurgical Transactions, Vol. xxxiii., p. 266.)

I. In the first great class of organic uterine diseases, which comprehends fibrous, fibro-cystic, glandular, and all other tumours which are not malignant, I have derived little or no aid from the speculum in their diagnosis or treatment. When fibrous and other tumours are formed under the peritoneum, or between the muscular fibres, or under the lining membrane and distend the cavity, their existence can only be determined by a careful examination of the hypogastrium, and of the interior of the pelvis through the vagina and rectum. The uterus is usually felt large, hard, irregular, and the cervix shortened. Where these tumours have passed partially or completely through the *os uteri*, their size, density, the length and thickness of their roots, and the relations these bear to the *os* and *cervix uteri*, can only be determined by the touch. I have never detected a small polypus within the *os uteri*, or hanging through it, which I had failed to detect with the finger. In cases of this description I have, however, repeatedly employed the speculum to ascertain the colour of the polypus, and the degree of vascularity of the investing membrane, which, without ocular examination, could not have been determined. The knowledge thus acquired was of no use in the treatment.

In a case of fibro-cystic polypus of the uterus, which occurred at St George's Hospital upwards of eight years ago, under the care of Mr Cutler, the speculum was introduced, and we saw clearly the small cysts under the vascular covering membrane. The speculum was withdrawn before the operation for the removal of the tumour had commenced.

In a case of small glandular polypus in a sterile married lady, which I saw with Mr Painter, the speculum was employed, and it made us acquainted with the colour, and more perfectly with the nature and diminutive size, of the disease. The polypus was removed with the forceps, after the speculum had been withdrawn.

In a similar case which I saw with Mr Jonson of Grosvenor Place, the speculum was employed for the same purpose after the nature of the disease had been satisfactorily ascertained by the touch. The tumour was readily removed with the forceps after the speculum had been withdrawn.

Very recently I saw a sterile married lady, with Dr Meryon, who had a small polypus hanging through the *os uteri.* In that case the speculum had been employed before the patient came to London, and for that reason alone I had recourse to it. The tumour presented the appearance of a large bean, was of a bright red colour, like vascular tumours of the *meatus urinarius,* and bled freely when touched, though the surface was not ulcerated. The length and thickness of the root, on which the speculum threw no light, had previously been ascertained with the finger. The forceps was passed through the tube, and the tumour removed; but it is now my conviction, that the peduncle would have been more effectually destroyed, had the forceps been passed up along the fore and middle fingers of the left hand in the usual manner.

More recently, with Mr Henry Charles Johnson, I removed a small polypus hanging through the *os uteri,* with the forceps, in a most satisfactory manner, without the speculum altogether. In all large uterine polypi it is obvious that the speculum can be of no use, and that it would not enable us in any case to decide, whether the tumour in the vagina was a polypus or an inverted uterus; a small portion only of the lining membrane of the uterus, in either case, being all that could possibly be presented to the eye. A case of large globular tumour in the vagina, now under the care of Mr Cathrow, strikingly illustrates the truth of what has now been stated respecting the use of the speculum in the diagnosis of inverted uterus, and fibrous tumours.

II. In all the varieties of malignant diseases of the uterus, scirrhus, fungoid cancer, and corroding or phagedenic ulceration, the speculum has given me no assistance whatever in their diagnosis and treatment, either in the early or in the advanced stages. I have never, in a single instance, failed to determine by the sense of touch, when cancer of the uterus had commenced; but I have repeatedly, after the most careful examination, both with and without the speculum, suspected that it would be developed, when the result proved that my fears were groundless. I am fully satisfied that the speculum does not enable us to decide earlier than the finger that cancer has commenced; and if it did so, as some maintain, and enable us to make applications to the *os uteri,* which could not be made without, not the slightest advantage would be gained in practice. When cancer of the uterus has advanced to ulceration, the speculum is not only useless, but positively injurious, and ought not to be used. In the year 1827, when I first became acquainted with the speculum, and saw it very frequently employed in a great public institution, a patient with ulcerated carcinoma, speedily died from hemorrhage after the introduction of the bivalve speculum. In cases of ulcerated cancer of the uterus, the best French writers have interdicted its use. "The condition of the womb itself," observes M. Teallier, "forbids sometimes the employment of the speculum. Deep bleeding ulcerations in its neck, its great enlargement; fungous growths rising from the surface, all prevent and render useless this method of exploration." M. Pauly gives the same opinion, and relates a case in which the speculum produced extensive laceration of the vagina, and death in two hours.

Several cases of ulcerated carcinoma have come under my observations, in which the speculum and ignorance of uterine pathology appeared to have led to the commission of the most grievous mistakes. In one of these, even in the last stage, the speculum and caustic had been employed almost daily for months, and hopes of recovery held out, when the patient had only a very short time to live. In another case which I saw with Mr York, where the *os* and *cervix uteri*, and a portion of the vagina, were all extensively disorganised by cancerous ulceration, the speculum and caustic were used, at first daily, and then twice a week for months, by the physician under whose care the patient came at last, without the slightest benefit. I have seen other cases analogous to these, and several others which I had not seen have been related to me.

III. From the age of maturity to the middle period of life, the uterus is rarely, seldom at least, comparatively with advanced age, affected with organic disease of any kind. Amenorrhœa, hysteria, dysmenorrhæa, menorrhagia, leucorrhœa, and various nervous affections, local and constitutional, are those from which females chiefly suffer before the age of twenty-five or thirty. An examination of the physical condition of the uterus in unmarried women, either with or without the speculum, I have always refused to make, even when requested to do so, unless pain, severe and almost constant in the region of the uterus existed, leucorrhœa or hemorrhage, which did not yield to treatment, and where the symptoms did not make me strongly suspect the presence of some displacement or organic disease. In unmarried women, whatever their rank or condition in life may be, the integrity of their structures should not be destroyed with the speculum, nor their modesty wounded by an examination of any kind without a necessity for such a proceeding being clearly shown. Even in married women, who are barren, or who have had children, it is unjustifiable on the grounds of propriety and morality, to institute an examination of any sort, unless the symptoms warrant the supposition that the uterus is displaced, or is in a morbid condition, the nature of which cannot be determined by the symptoms alone. Numerous cases of leucorrhœa in young unmarried females, where rational, constitutional, and local treatment is adopted, perfectly recover, where no examination is made.

In cases of obstinate leucorrhœa, I have often employed the speculum in married women after I had failed to detect the existence of disease by the ordinary mode of examination. In some of these cases, there has been seen an unusual degree of redness of the *os uteri,* sometimes affecting the whole, and at other times limited to the inner margin, with or without swelling. The white viscid discharge has been seen issuing from the *os uteri.* I have never seen ulceration of the orifice of the uterus in such a case, and the condition of the interior of the cervix I have never been able to demonstrate, either with the bivalve or any other speculum ; nor do I believe that, in the ordinary condition of the *os uteri,* it is possible to see the inner surface of the cervix to any great extent by any means. Where the orifice is unusually open, the lips may be separated sometimes to a small extent; but never, as far as my observation goes, to show more than an extremely small part of the interior of the cervix. In some cases of chronic leucorrhœa, with redness and swelling of the *os uteri,* I have known the speculum and caustic employed at short intervals for many months without the slightest benefit; but the leucorrhœa has ceased, as the general health has been restored by constitutional and topical treatment. In a case of sterility with obstinate leucorrhœa, which has very recently occurred, the injection into the cavity of the uterus of a weak solution of sulphate of zinc, caused the most sudden and excruciating pain, and collapse of the nervous system, which had nearly proved fatal.

IV. Sometimes one or both lips of the *os uteri* are in the condition which is usually called hypertrophy, and which has no relation to cancer. One lip perfectly smooth, and not unusually hard or irregular, as in cancer, protrudes beyond the other to the extent of half an inch, or three quarters, or more. I have known this state mistaken for polypus, seized with the forceps, dragged down to the orifice of the vagina, and removed with the knife or scissors. At other times both the lips are swollen, nodulated, and fissured, and the mucous membrane covering them intensely red, with an appearance of superficial excoriations or granulations, which are elevated above the surrounding surface. These apparent granulations are usually considered and treated as ulcers of the *os* and *cervix uteri,* but they do not present the appearances which ulcers present on the surface of the body, or in the mucous membranes lining the viscera, and they are not identical with the granulations which fill up healthy ulcers. They present the appearances often observed on the tonsils, and which are said to be ulcers, but which are not. This granular state of the *os uteri,* in which the diseased mucous membrane is raised above the level of the surrounding surface, and not depressed like ulcerations in all other parts of the body, is not dissimilar to granular disease of the mucous membrane of the eyelids, the most aggravated cases of which are well known to be produced by the abuse of escharotic applications. These morbid states of the *os uteri* most frequently indicate the existence of some disease of the nabothean glands, penniform, rugæ, lining membrane or walls of the uterus, or of the general health, which lies far beyond the reach of the speculum and caustic. The state of the orifice of the urethra not unfrequently indicates the existence of disease of the prostate gland, or of the urethra itself near the bladder. Such is the case with the *os uteri*, and its red, swollen, hypertrophied, granular state, often indicates morbid conditions of the constitution, of the glands, mucous membrane, and walls of the uterus, on the nature, diagnosis, and treatment of which, little or no information is derived from the use of the speculum. In these cases, I have known leeches, scarifications, caustic, and the speculum employed upon a great scale, and sometimes, I admit (if the reports of patients are always to be trusted to), with apparent temporary relief. Gently rubbing the *os uteri* with lunar caustic through the speculum, a few times at long intervals, has appeared to effect all the good which such local treatment can accomplish. It is impossible that any disease of the *os uteri*, or any other part of the body, can require, twice or thrice a week for six or nine months, the alternate applications of leeches and caustic through the speculum, in the manner which has recently been recommended and practised; and it is my conviction, that rational constitutional treatment, and injections, sedative and astringent, will in these morbid conditions of the *os uteri* succeed ultimately in producing more successful results than escharotics.

In some of these cases, instead of adopting the course which I have now recommended, for the removal of these diseased states of the uterus, *potassa fusa* has been applied to the *os* and *cervix uteri*, a piece of *potassa fusa* has been run into the cervix and twisted about in all directions, which has produced sloughing and complete disorganisation of the parts. In one case, which I saw in a young married lady, this had been done repeatedly, and the patient had nearly perished from peritonitis and the sloughing which followed. I saw this lady some months after, with her general health deeply injured, the lips of the *os uteri* partially gone, and the parts cicatrized and contracted. I sought in vain for an explanation of the grounds of such practice, and recommended greater caution in the use of *potassa fusa*; but the advice was thrown away. Twice since the same experiment has been repeated by the same individual, and with the same results.

One of the most learned Fellows of this Society has communicated to me the history of a case which came under his observation, in which sloughing followed the application of *potassa fusa* to the *os uteri.* The *cervix uteri* presented the appearance of a hard, pale, shining cicatrix. A narrow chink only was to be seen, into which a small bougie could not enter. The orifice was greatly contracted, if not absolutely closed. The eminent pathologist who has communicated to me the history of this case has justly observed, "That if *potassa fusa* be introduced into the *os* and *cervix uteri*, and turned firmly round, or be applied severely, as has lately been recommended, there must be a partial death and destruction of the part, and a state of actual mortification or gangrene induced; and this injury nature can only repair by sloughing, ulceration, cicatrization, and contraction, if not a complete closure of the *cervix uteri.*"

An English physician, eminent in science, after visiting an hospital in Paris, a few days ago, wrote as follows to a friend in London:—"I have seen some very wonderful things, which I will recount to you. A large speculum being passed up to the neck of the uterus, red hot irons are inserted into the neck, right into the os, which is also cauterized on its surface, and as soon as it is done the creatures get up and walk away, and never seem to feel it at all. To-day M—— found an os wider open than it should be, and so, to satisfy his curiosity, he poked an immense long pair of forceps almost three inches into the cavity of the uterus; yet more, some days ago, I saw him pass his stick of lunar caustic into the os, a little way into the neck, then break it off and leave it there." If such practices as these, here described, were only employed in Paris, from whence all the pretended recent improvements in uterine pathology and therapeutics have issued, I should not now have considered it necessary to denounce them to the Royal Medical and Chirurgical Society.

V. In the year 1832 my colleagues at the St Mary-le-bone Infirmary, Dr Hope, Dr Sims, Mr Stafford, and Mr Perry, late secretary to this society, at my request, desired that the uteri of all the women who died in the wards should be carefully examined, and that they should be preserved for my inspection when any morbid appearance was observed. "From 1017 *post mortem* examinations of females, of all ages, made by Dr Boyd (after excluding those of children and others, in which special mention is not made of the uterus), there were found 708 where either the state or weight of the uterus was noted. In 13 of these there was congestion or inflammation, which had no specific character, and in some the inflammation was limited to the fundus, and could not have been detected, unless the uterus had been removed or cut open. In at least three there was enlargement and induration, which did not appear to have any specific character, and in two there was extreme wasting; 24 were puerperal cases; 13 dropsy of the ovaries or Fallopian tubes; in 31 fibrous or bony tumours; and in 21 cancer." "My impression is," adds Dr Boyd in the same report, "that ulceration of the neck or the mouth of the womb is an exceedingly rare disease, else I must have observed it; having cut up and weighed many hundreds, it could have scarcely escaped my notice."

Dr Allen, the present resident medical officer at the St Mary-le-bone Infirmary, has held the office about twelve years, and he states to me, that he has actually examined or been present at the examination of the bodies of more than 1000 adult females, and "of these he does not believe, that he ever saw more than twenty examples of ulceration of the *os uteri* of any kind, scrofulous or venereal, excluding cases of ulcerated cancer of the uterus, which were known to exist before death." Dr Allen further states, that he has "observed in some cases, a portion of the mucous membrane of one lip slightly abraded; this he has seen occasionally, but not often."

Mr Prescott Hewett (a great part of whose professional education was received in Paris, and who, for some years, followed the practice of the several professors who were in the habit of exhibiting to their pupils all the appearances which the *os uteri* presented, through the speculum) was six years curator of the Museum of St George's Hospital, and conducted all the *post mortem* examinations. He states, that during that time he could not have examined fewer than 600 uteri, "and very seldom, if ever, did he meet with anything which could be called ulceration of the *os* and *cervix uteri*, independent of scrofula and cancer."

Mr George Pollock held the same office for three years, during which time he examined the bodies of more than 300 women, and in every case the uterus was cut open and examined. In four uteri ulceration was observed, but three of these were scrofulous patients, and scrofulous ulceration existed in other organs. In the fourth case the ulceration must have been cancerous, as it involved the vagina extensively as well as the *os uteri.* Mr Hewett and Mr Pollock did not therefore observe a single example of simple ulceration of the os and cervix in the 900 uteri they examined, which confirms the accuracy of the opinion given by Dr Boyd, that "ulceration of the neck or mouth of the womb is a very rare disease."

Mr Gray succeeded Mr Pollock at St George's Hospital, and he examined 180 uteri. Distinct ulceration of the os and cervix was only observed by him in three uteri, and the nature of the ulceration in those three cases was not determined with certainty.

Mr Gray states to me further, that redness, slight abrasions, and granulations were sometimes, but not frequently, observed.

Neither in the living nor in the dead body have I ever seen ulceration of the *os* and *cervix uteri* except of a SPECIFIC character, and especially scrofulous and cancerous; but I have met with a very considerable number of cases, in which it had been affirmed by others to exist during life after deliberate and repeated examination by them with the speculum, where I ascertained that ulceration did not exist in the *os* and *cervix uteri*, nor disease of any kind. This mistake has happened not once, and to one individual, but in a number of cases, and to several practitioners, who avow that they are "in the daily and almost hourly use of the speculum."

Two years ago, I saw a young unmarried lady suffering from hysteria. She had been examined with the speculum by a practitioner previously in attendance, and was declared to have an engorgement of the uterus and ulceration of the cervix. The speculum and caustic, twice a week for several months, were required, it was said, to complete the cure. At the request of the ordinary medical attendant of the family, I examined the *os uteri* both with and without the speculum, and he did the same most carefully, but no trace of ulceration or disease of any kind could be detected in the parts. We recommended that the patient should leave her couch, to which she had been doomed; and, by the use of valerian, and other appropriate remedies, with exercise and sea-air, she speedily and most completely recovered without the speculum and caustic.

On the 3d October 1849, I was consulted by a lady, aged twenty, who had enjoyed good health before her marriage. Soon after this, pregnancy took place; and for ten weeks, according to her own report, she was extremely ill, had constant sickness, pain in the region of the uterus, and in the legs; swimming in the head, inability to walk;—the whole nervous system was greatly disordered. Miscarriage took place in May 1848, about the tenth week, with much hemorrhage. I was requested by the patient's mother to examine the uterus, and to state whether it was in a sound or diseased condition. I did so by the touch, and ascertained that it was small, moveable, and neither displaced nor diseased, but very tender on pressure about the crevix. I was then request to examine carefully with the speculum, and state whether or not ulceration existed in the mouth and neck of the womb, and whether one of the ovaria was not diseased. I did so, but could see nothing like an ulcer in these parts. I was then informed that she had been examined by another physician with the speculum the day before, and that he had declared, in the most positive manner, that ulceration existed, which would render it necessary for the patient to remain several months in London to have caustic frequently applied. I recommended her to return home immediately, to avoid the speculum and caustic, and trust her recovery to sea-air, carriage exercise, sedatives, and mild tonics. For some months the pains in the uterine region, and inability to walk, continued ; but in the progress of time all the symptoms wholly disappeared, without any other treatment being adopted ; pregnancy again took place, she went to the full period, was safely delivered, suckled her child, and is now in the enjoyment of excellent health.

On the 22d February 1850, at the request of Dr Page, Physician to St George's Hospital, I saw a married lady, aged 32, who had suffered severely from hysteria, both before and after her marriage. She was the mother of several healthy children, the youngest being two years of age. The general health was good, the catamenia were regular, there was no leucorrhœa nor sign of uterine disease. This lady was, however, made to believe by a friend, who had herself been treated with the speculum and caustic during some months, that there was something wrong about her womb, and that she must, therefore, consult the practitioner referred to in the last case, The lady did so, and was immediately informed that she was labouring under inflammation and ulceration of the cervix, and that it would be necessary to come to London for six months, at least, be confined to her couch, and have caustic frequently applied through the speculum. I examined the *os* and *cervix uteri* of this patient, both with the finger and the eye, but I could discover no trace of inflammation, ulceration, excoriation, granulation, or disease of any kind whatever. Never in the whole course of my experience had I seen and felt the *os* and *cervix uteri* in a more healthy condition.

I will not fatigue the Society by relating the histories of many additional cases, which have come under my observation, in which it had been previously affirmed, after deliberate examination with the speculum, that ulceration of the *os* and *cervix uteri* existed, where there was actually no ulceration nor disease of any kind.

VI. Dr Copland has communicated to me the following history of a remarkable case, in which the speculum was used, in my opinion, contrary to every scientific principle, and with fatal effects.

"A lady, aged fifty," says Dr Copland, "had been several years afflicted with jaundice, and in the latter period of those years became paraplegic. The paraplegia was to a certain extent removed, so that she was able to drive out in her carriage. She had consulted several physicians before she came to me, and I had seen her repeatedly during the last few years. She had heard that a physician had cured the wife of a distinguished person of some very serious disease of the womb. When this was related to her, and that it was done in consequence of his employing a new method of examination, and that, by having recourse to this, he had not only cured the lady referred to, but was also better able than any other physician in London to find out the source of all diseases occurring in females, she went and consulted him, and at the same time informed him that she was under my care. This lady begged me to meet this practitioner in consultation, which I did, when he informed me what this new method of examination was. He stated, that from the previous conversation he had had with the patient, he believed that all her illness arose from disease of the uterus, and he wished to demonstrate this with the speculum. To this I answered, that there could be no disease of the uterus or its appendages, because the uterine functions had been performed regularly up to the age of forty-nine years, and that she had never complained of leucorrhœa, or of any uneasiness about the uterus. He succeeded, nevertheless, in recommending, with the concurrence of this lady's married sister, who had accompanied her from the country, that an examination with the speculum should be made. I said it appeared to me wholly unnecessary, but I would leave the patient to her own discretion.

"The examination was commenced, and I remained some time, but was shocked with the proceedings, for the hymen was unbroken, and the doors were all obliged to be closed to prevent the people in the house from hearing her screams and being alarmed. The examination went on, and after having stopped the greater part of an hour, during which it continued and was not completed, I left. About seven or eight days after this, I was informed, that the paraplegic symptoms, which had previously been much mitigated, had become exasperated, and had extended so as to produce general palsy, and ultimately delirium and coma. She died in eight days after the examination with the speculum, and I requested an examination of the body to be made.

"This was done in the presence of Dr King, two surgeons from Woolwich, and myself. The operator with the speculum was also requested to attend, but he did not appear. The spine was opened, and as high as the first and second dorsal vertebra, lymph was effused between the membranes, but it was not recent, and was partially converted into a gelatinous adipose substance. But above this, and up as high as the base of the brain, there were indications of recent inflammation, with a copious effusion of coagulated lymph, observed. The uterus and all its appendages were perfectly healthy, the *os cervix* and every part of the uterus was in a sound state, and the vagina also was perfectly healthy except at its orifice, which presented appearances of recent violence. The hymen was completely torn."

PART II.

CRITICAL ANALYSIS.

ART. I.—*An Essay on a New Mode of Treatment for Diseased Joints and the Non-Union of Fracture; with Cases and Formulæ of the Various Preparations used.* By THOMAS BUCHANAN, C.M., &c., Surgeon to the Hull Dispensary for Diseases of the Eye and Ear. London, 1828. 8vo. Pp. 100.

2. *A Practical Treatise on Diseases of the Joints.* By W. J. WICKHAM, Surgeon to the County Hospital, Winchester. Winchester. London, 1833. 8vo. Pp. 178.

3. *On Ankylosis or Stiff-Joint; a Practical Treatise on the Contractions and Deformities resulting from Diseases of the Joints.* By W. J. LITTLE, M.D., Lecturer on Medicine at, and Assistant Physician to, the London Hospital, &c. &c. London, 1843. 8vo. Pp. 145.

IN the seventy-second volume of this Journal[*] is given an account of a method of treating that form of stiff-joint called imperfect ANKYLOSIS, by means of the use of cold water applied in a particular mode; with some observations on ANKYLOSIS and the inefficiency of the usual methods of treatment. In that account no mention is made of a method of treatment which was proposed in 1843 by Dr Little, and which that gentleman has since practised on an extended scale. To that method it may be proper shortly to advert, in order to compare its merits with those of the method so strongly recommended by M. Fleury.

Dr Little informs the reader that it is not his intention, in his remarks on the nature and varieties of Ankylosis, to examine the opinions of other authors, but rather to state the results of his own observation and experience; and hence the view which he gives of this lesion is short, and chiefly in reference to the mode of treatment which he recommends. It may be not unprofitable, nevertheless, to advert to the notions of various observers, on the peculiar nature and causes of this lesion, in order to form a correct estimate of the comparative merits of the several methods proposed by different individuals for its relief or removal.

The only true method, we conceive, of forming just ideas on the nature of *Ankylosis*, is to consider the several morbid states of an articulation which may give rise to and terminate in that condition.

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[*] Edinburgh Med. and Surg. Journal, Vol. lxxii. July 1849.

ANKYLOSIS is differently defined by different authors; yet all agree in this, that it consists in the motion of a joint being impeded, partially or completely, in consequence of certain changes which the articular tissues have undergone. By *Ankylosis*, Dr Little understands unnatural rigidity of a joint, arising from causes operating in a direct manner on the structures immediately concerned in the articulation, and by which its natural movements are rendered impossible. He adds, that the term includes the ideas of distortion and deformity, in so far as in the majority of cases of ankylosis, the part is fixed in a position different from that assumed by the limb in a state of repose, and accompanied by a change in form, detracting from its symmetry. Though occasionally used synonymously with Contracture, it differs from that in several circumstances.

A great evil in Medicine and Surgery is, that several of the terms are employed in a careless and irregular manner; and scarcely any term has been employed with so little precision, and so loosely, as that of ANKYLOSIS. This might be of small moment, were it not, that the use of the term has a direct reference, in many instances, to the use of remedies, and to the admissibility of certain methods of treatment. It has been observed that certain forms of stiff-joint are susceptible of cure; and that other forms of it are either not susceptible of cure in any mode, or admit of improvement only in a very slight degree. The means under which the restoration has taken place in the first class of cases are multiplied, various, and not unfrequently contradictory. One or more of these remedial means and therapeutic methods, nevertheless, have been applied, with different degrees of confidence, to attempt the restoration of the second class of cases of stiff-joint, and very generally without success, sometimes with serious injury to the joint, and to the health of the individual. Cases are from time to time taking place, in which it is said Ankylosis has been cured, and the movements of the joint have been restored. The remedies and therapeutic methods, under the use of which these restorations were effected, have been applied to other instances of stiff-joint; but no improvement has taken place. These varied results depend very much, if not altogether, upon the circumstance that the remedies which were efficacious in the former class of cases, were inadequate and inapplicable in the latter. From this discordance results an important inquiry,—in what respect or respects the latter class of cases differs from the former? To account for the discordance, several surgeons have recognised two forms of ANKYLOSIS, one true and permanent, the other false or spurious and temporary. The curable class of cases, or those admitting of restoration, have been referred to the second head; while those not admitting in any manner or degree of such restoration have been referred to the head of True or Permanent and Complete **Ankylosis**.

It still remains to be determined what are the circumstances which distinguish true, complete, and permanent Ankylosis, and those which form the characters of spurious and temporary Ankylosis. The name is entirely symptomatic and semiographical, and has been used to denominate different forms and degrees of immovable or imperfectly movable joint, with little or no regard to the internal pathological conditions with which the external state is associated. This careless and irregular mode of using the term is so generally manifest in the writings of surgeons, that it does not require any specific proof; but if such proof were wanted, the reader has only to turn to the *Pathologie Chirurgicale* of Lassus,* in order to see in how vague and indefinite a manner it is possible to speak of this lesion.

This writer, in other points a very sensible and intelligent surgeon, gives, in the thirty-eighth section of his first volume, on Rheumatism, the following explanations, which may be regarded as indicating the state of surgical opinions in the end of the eighteenth and beginning of the nineteenth century.

According to this author, those who have long and habitually, as it were, suffered under rheumatic pains in the loins, sometimes lose the faculty of keeping themselves erect and raising themselves, in consequence of mutual Ankylosis of several vertebræ. This is observed, he adds, in most men who work in a stooping attitude, exposing themselves to cold, to rain, to all the atmospheric variations; or there follows a sort of atony, a feebleness, a species of palsy of the lower extremities.

Next he states, that if this inflammation,—the rheumatic, with fever, acute pain, and sleeplessness,—attack the ligaments, the membranes, the periosteum of the lumbar vertebræ, it terminates, when entirely neglected, towards the twentieth or thirtieth day, in abscess, without change of colour in the skin, with evident fluctuation in the groin, at the lateral part of the vertebræ, or towards the ischiatic tuberosity, an abscess necessarily mortal, and which is the result of caries of the bodies of one or more vertebræ. This shows the vague manner in which the word rheumatism is used. It is obvious that the author is here describing lumbar abscess from disease of the vertebræ; a malady which has rarely any connection with Ankylosis, unless it were to be healed either by art or spontaneously, when two or more of the diseased vertebræ may after a long time be consolidated in one mass, with spinal deformity.

Again he states that rheumatism of the neck becoming chronic, causes in children and in adults, the head to be obliquely reversed upon the shoulder of the diseased side, with slow deformity, and sometimes true Ankylosis of some of these vertebrae with each other. The disease in this instance he pronounces to be incurable, because it is no longer possible to raise the head erect, since the vertebræ possess in this instance no movement. He allows it to be curable only when the head can be kept in its natural erect position by mechanical means.

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* Pathologie Chirurgicale, par M. Lassus. Nouvelle Edition. Tome Premier A Paris, 1809. P. 227.

If this is to be styled rheumatism, it is a rare form of it, and is rather to be regarded as one of the effects of that disease. We have seen the following take place in adults, after an attack of what was called rheumatism of the cervical region. The neck and head became stiff and incapable of motion, while the individual could neither turn the head without turning the person, unless to a very limited extent; nor could he bend the head forwards upon the chest. This appeared to be the effect of thickening of the whole cervical fascia; and probably the diseased state had extended to the periosteum of the vertebræ, and some of their articulations. But it was impossible to ascertain whether there was adhesion of these vertebræ by their articulations or not. This, nevertheless, may be regarded as an example of Ankylosis succeeding rheumatism.

Lassus next specifies, under this enumeration, inflammation and suppuration of the mastoid cells as an effect of rheumatic inflammation, fixed on the tendinous and aponeurotic portion of the sterno-mastoid muscle and the periosteum covering the mastoid process. It is more probable, that the disease, in this instance, arose first in the membrane lining the mastoid cells.

As another instance of the effects of rheumatic inflammation, he adduces the usual changes which take place in disease of the hip-joint. (*Morbus Coxarius*).

Lastly, he states that it is common for rheumatism, which has been long fixed upon the knee-joint, the elbow-joint, or the shoulder-joint, to produce there a white soft œdematous swelling, with little pain, void of fluctuation, capable of solution, when it consists only in simple serous infiltration of the subcutaneous cellular tissue, but incapable of resolution when this tissue is distended and thickened by an accumulation of albuminous, gelatinous, yellowish fluid. The tumour in this stage being no longer œdematous, forms that incurable disease known under the name of false Ankylosis, *Fungus*, and White Swelling of the joint*

This is a strange association. White Swelling, which is used to designate four or five different morbid states, is the same as spurious Ankylosis. The truth is now known to be, that Ankylosis, in different stages and degrees, sometimes false and incomplete, sometimes true and perfect, may be the effect of several of those disorders which were formerly collected under the general name of White Swelling.

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* Pathologie Chirurgicale, Tome i., p. 229.

Such are the varied sources and determining causes of Ankylosis according to Lassus; independent of this, that he allows it to be the effect of abscess within the cavity of the joints (Inflammation of the Synovial Membrane), and of the abscesses which may be formed in the cellular tissue around the articular capsules, either in consequence of *Synovitis*, or from wounds, injuries, and other disorders around the articular tissues. This Ankylosis he allows to be frequent after such affections in the elbow-joint and in the wrist.

Ankylosis is defined by Monteggia to be that state of a joint naturally movable, in which the motion of the articulating bones is impeded. This impeded motion may be frequently the consequence of various diseases of the joints, and also the consequence of dislocations, and of fractures in the vicinity of the articulation. This defect of movement, he adds, acquires the name of Ankylosis only in case that it forms the principal character or remnant of the disease. If the immobility depends on an actual disease still present, on the cessation of which it may be supposed that the natural mobility could be restored, then the state deserves not the name of Ankylosis, as is exemplified in the case of a joint being incapable of movement in consequence of inflammation or any other spastic or painful disease, in consequence of palsy, unreduced luxation, and similar causes.

The movement of a joint may be either entirely and permanently impeded; and then the Ankylosis is called true or perfect; or the motion may be merely more difficult and more limited than natural, and its complete restoration may still be hoped for; and in this case it is denominated false or imperfect Ankylosis.

The proximate causes of Ankylosis, Monteggia represents to be retraction of the muscles; retraction of the ligaments; adhesion of the latter and of the tendons surrounding the articulation, and of the bones themselves together; or the changed figure of the articulating surfaces by enlargement of the bones, hard tophaceous concretions, excrescences and other inequalities, in consequence of which the one cannot glide upon the other in natural movements; and in like manner extensive *cicatrices* of the integuments and cellular membrane, conditions consequent on wounds, gangrene, or burns.

Retraction of the muscles is the result of irritation communicated to these muscles by the articular disease, in consequence of which they are placed in a state of permanent contraction; or it may be the consequence of their being left for a long time immovable in the same position. In circumstances of this kind, for the most part the member remains ankylosed in the state of flexion, because the flexor muscles in general preponderate in energy over the extensor muscles, excepting those of the foot, in which the extensors are strongest. Indeed, in many diseases, and especially in chronic ulcers of the legs, as also in consequence of the long inaction produced by fractures or luxations, the foot alone remains extended to excess, in consequence of which patients, on first rsing from bed and attempting to walk, are unable to place the foot flat on the ground, and can only touch the ground with the inferior extremity of the metatarsus and the toes, while the heel is elevated. Monteggia adds, that he knew different diseased states, from chronic ulcers in the leg, which had left after them this species of incurable Ankylosis, though these patients had no disease in the articulation of the foot; and hence it is necessary to take particular care against this in the instance of long continued ulcers and wounds in the legs. He states further, that ladies, who in former times wore very high-heeled shoes, ended at length in acquiring some degree of this deformity; and that the proof of this was found in the fact, that upon dissecting the foot, a part of the superior convexity of the astragalus was observed to be drawn downwards and forwards, out of the articular notch of the tibia.

This preponderance of the extensor muscles of the foot over the flexors, nevertheless, he allows, is verified only in the instance of adults, probably because the extensor muscles are greatly strengthened by standing and walking upon the legs; while in new-born children, who have not yet practised this exercise, the action of the flexor muscles is wont to prevail, so that in them the feet are much expanded, showing that the *dorsum* of the feet is so much raised towards the tibia, as these parts may easily be touched, which cannot take place in adults.

In order to remedy the species of Ankylosis arising from contraction of the muscles, Monteggia recommends that they should be gradually forced to movements, and sometimes by the continued action of lacs and other mechanical means, and with the prolonged use of emollient and resolvent agents, such as warm baths of water, of decoction of bran, or broth of tripe, or of sheep-head, long inunctions with olive oil, the use of the volatile liniment, camphorated soap, or mercurial liniment; sulphurous baths, douches, and sulphurous mud baths; artificial douches, with a solution of sal-ammoniac; or vapour baths, which should be directed in greater amount and strength upon the part by means of a tube, or still better with the Eolipyle. Greatly commended also, as very suitable, are certain volatile fumigations, made with sal-ammoniac and salt of tartar, mixed together in vessels of water, conducting the vapours thereof to the affected part by means of a funnel. For this immobility also, arising from retraction of muscles, Latta particularly recommends electricity, by causing the shocks to pass through the whole length of the muscle.

The remedies now specified, he further recommends for the other forms of Ankylosis, namely, that from rigidity or persistent swelling of the ligaments, in consequence of long rest or of inflammation. To the propriety of this advice we may afterwards advert.

With regard to the selection of remedies in Ankylosis, it will be important, he says, to remember, that where there are simple rigidity and immobility, simple emollients and the vapour of warm water alone will suit; and that the animal fats and oils are preferred by Benjamin Bell to the vegetable oils, because this surgeon thought that the former penetrate and combine better with the animal textures, by reason of their analogy of substance. Wherever, then, there is any swelling to be resolved, there is an indication for the use of remedies, something stimulating, introduced principally in a mild aqueous or oily vehicle.

The following remark deserves attention, and is given in the words of the author.

"507. It is nevertheless to be observed, that when an immovable articulation is the seat of considerable swelling, the character of some other disease which produces the swelling may prevail, and the name of Ankylosis, which refers to the simple isolated defect of immobility, may not be applicable. And although in practice, and even in some books, the name of Ankylosis is occasionally employed to designate an articular disease, yet this is an abuse of language not to be imitated." *

This is indeed the conclusion at which every intelligent surgeon must arrive. The name has been employed so loosely and generally, to express every form and degree of immobility of the joints, whatever might be the pathological cause, that it has become altogether useless, when any inquiry is made, or when facts are given, illustrating the method or methods of treatment which have been attended with success; in short, when any attempt is made to form an estimate of the comparative merits of different therapeutic methods.

"Adhesion of the ligaments, of the tendons, and of the bones, follows as an effect of inflammation, or from condensation of the nutrient fluids which are exuded, and which, in consequence of rest, are transformed into cellular filaments, shreds; not from any inspissation of the synovia, as was formerly believed. Perhaps,

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* Instituzione Chirurgiche di G. B. Monteggia. Edizione secunda. Vol. v. Milano, 1814. Capo xxvii., p. 249. It may here be mentioned, that Monteggia gives, on the subject of ankylosis, two articles, one in the second volume, chapter xviii, under the head of Diseases of the Articulations, parag. 798–809 inclusive (p. 342–346); and the other in the fifth volume, in a separate chapter by itself. Both articles are very similar, in many respects verbally the same; but the latter, in volume fifth, is the most ample, and appears to have been composed after the author had thought that the first was less complete and satisfactory. The passage now quoted is not in the first article; but all the important matters of the first are included in the second.

also, the very tissue of the cartilaginous incrustation of the articular extremities being rubbed off, and removed by want of attrition, is resolved into the original cellular tissue from which it was formed. Indeed, all the articular bones, which have no longer movement, lose at length their cartilaginous polish, becoming rough and irregular in surface, while the cartilaginous layer, by which they are covered, disappears in part, or altogether; and conversely, a new cartilaginous crust is formed in those situations, to which friction is transferred in the case of dislocated bones, as I have observed in my *Fasciculi Pathologici.*"

"509. Exercise, combined with emollients, may be adequate in some instances to effect elongation, or even sometimes rupture of those morbid filaments of adhesion, and restore once more their uniform cartilaginous polish to the articular surfaces, so that the Ankylosis may be overcome. This exercise or graduated movement ought however to be generally effected by little and little, and without violence, whether done by the patient himself, or by others who supply the defects of his infirmity, as it is impossible in all cases to trust entirely to him alone."

"510. When, however, the filaments of adhesion are somewhat multiplied and strong, the union effected by these is so resistant that it can no longer be overcome. Some instances indeed there are of similar Ankylosis removed as it were in one moment by a fall, or other force, in which case there is reason to believe that all these adhesions were at once broken. But having attempted in a similar case, in the dead body, to overcome with great force the obstacle in an instance of Ankylosis of the knee, by bending it violently, the bony process which is placed between the condyles of the tibia was detached, and it remained imbedded and attached to the furrow which separates the condyles of the femur, before the adhesions were ruptured, although they were membranous and cellular, but rendered strong by their number. Leveillé remarks, that what seems externally a general union of the whole surface of the articulated bones between each other, is confined sometimes to the mere outline of the articulation, while within, the bones are found entirely separate.* In this case it will be more easy for any accidental force to effect separation. I have seen both the osseous adhesion and the fibrous cellular one, confined at times to the mere circumference, and in other instances general and extended to the whole articular surface. Of this, Reimarus† and Flajani‡ and others give instances."

"511. Such adhesive fibres remain not always membranous, but assume the nature of the parts between which they are formed;

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* Leveillé, Nouvelle Doctrine Chirurgicale. Tome ii. p. 605.

† Reimarus de Tumore ligamentorum circa articulos, &c.

‡ Nuovo Metodo di medicare alcune malattie. Dissert. iii., p. 97

that is to say, those formed between the articular bony surfaces are ossified as the bones. This, however, Monteggia believes, happens only when the bones are left denuded by the destruction of their cartilaginous crust. In this manner he has found perfectly united and mutually ossified, and left immovable, the bones of the foot with those of the leg, those of the leg with the femur, the knee-pan with the femoral condyles, the femur with the *ossa innominata*, the wrist with the bones of the forearm, and the latter with the humerus, principally in consequence of suppuration and articular caries. This species of bony Ankylosis, every one perceives, must be quite incurable.

512. A permanent and perfect form of Ankylosis is wont further to remain, when one or the other extremity of the articulated bones, or bone, have been sawed off; or when an entire bone has been removed, as has been occasionally done with the astragalus; and in a case related by F. Vurzio, Ankylosis of the knee-joint was the result in a case in which the fractured knee-pan had been taken away.

513. Supposing, then, that the Ankylosis is not always capable of being overcome by the means of art, it will be of consequence, at least in those instances in which it may be apprehended to be inevitable, to take the precaution of placing the parts in good season, in such a position, that the immobility may cause the smallest possible degree of defect. Hence, in diseases of the elbow-joint, it will be most convenient to place the limb in the bent position; the knee, the hand, and the thigh extended; and the foot bent at a right angle with the leg.

It appears from the account now given that Monteggia had improved in some degree upon the doctrines of Lassus. He shows greater discrimination in distinguishing the several morbid states which may terminate in Ankylosis, and expresses decidedly the opinion, that the term was then often employed in a careless and irregular manner. These views were given in 1815.

Boyer, who next deserves attention, is still more explicit in animadverting on the improper uses of the term, and directing the minds of surgeons to greater precision. This eminent surgeon, indeed, had bestowed great attention on the diseases of the joints, and rectifies many of the errors at that time prevalent. He has an instructive chapter (c. xiii. tom. iv.) on Consecutive Luxation of the Hip-Joint, which he was probably the first to trace to the effects of chronic disease attacking the textures of the articulation.

The name of Ankylosis, says Boyer, is given to that condition of a diarthrodial articulation in which the movements of the bones composing it are entirely abolished or greatly confined, whether the member is in a state of flexion or of extension.

He distinguishes Ankylosis into true and complete, and into false and incomplete. In true ankylosis the bones are so united and agglutinated together, that they form one and the same piece, so that the movements of the joint are for ever abolished. In false Ankylosis the bones are not agglutinated; they still enjoy a certain degree of mobility, and the movements of the articulation may be re-established when the cause by which they were prevented, has been removed. Ankylosis has been also distinguished into dry and suppurating; but this rests on no good foundation. When suppuration takes place within a joint, the impossibility or the constraint in the movements is not the principal disease; it is only the effect of a more severe disorder, as has been shown in speaking of the forms of White Swelling. The diseases which produce Ankylosis are not Ankylosis itself, and ought to be distinguished from that lesion. It is therefore an error to call by this name the tumours, the presence of which constrains or prevents the movements of a joint. This is, in short, giving the same name to the cause and to the effect.

One form of Ankylosis, he observes, is not always confined to a single joint; it sometimes attacks several of them. Sometimes even all the bones of the human body have been observed to be agglutinated together, and forming, as it were, one single piece. This is one of the effects of that species of rheumatism, or rheumatic gout, which attacks the capsules of the joints and their synovial membranes. Most commonly, however, Ankylosis is confined to one joint. The ginglymoid, or hinge-like joints, as the knee and elbow, are greatly more liable to this disorder than the orbicular articulations. The extent of the articular surfaces, their configuration, the number of ligaments and tendons by which the ginglymoid articulations are surrounded, he considers to be unquestionably the cause of the difference which is observed between them and the orbicular articulations in respect to the comparative frequency of Ankylosis.

Ankylosis he regards as always the result of another disease, that is not itself a primary affection. Nevertheless, prolonged immobility of an articulation may alone produce it; and he adduces as an instance the case of the Indian Faquirs, who remain after whole years in the same position, as a species of self-confined penance, and in whom most of the articulations are more or less Ankylosed. Sir Benjamin Brodie, it may be mentioned, records an instance of Ankylosis in the joints of the lower extremities produced by long-continued observance of the same posture, in the attempt to cure a disease of the spine. Most commonly, indeed, Ankylosis is the consequence of some disorder, which, besides the immobility which it demands, exerts often a direct influence upon the parts which compose the articulation. The diseases in consequence of which Ankylosis is most frequently produced are fractures, luxations, wrenches, wounds of the joints, white swellings, dropsy of the joints, exostoses, ossification of the cartilages and of the ligaments. It may also be the result of certain diseases of the soft parts which surround an articulation, as aneurismal tumours, wens, large abscesses, ulcers, burns, and gangrene.

In order to understand the manner in which Ankylosis is formed in consequence of the different diseases by which it is preceded, M. Boyer conceives that it is necessary to know what occurs to articulations which remain long in a state of immobility. In general, he remarks, organs continue fit for the exercise of their functions in proportion as they continue to perform these functions; and conversely, the cessation or interruption in the performance of the functions unfits the organs for their performance. This principle, true within certain limits, is, he conceives, particularly applicable to the circumstances of articulations, in which movement maintains the disposition necessary to the exercise of the functions of the articular textures. Movement favours the secretion of synovia in due proportion. If an articulation remains long in an immovable state, the synovia in it is diminished, and is secreted only in very small quantity. Deprived of this lubricating fluid, the articular surfaces lose their smoothness, and no longer glide over each other with that facility which renders their friction insensible. The ligaments and tendons, always maintained in the same position, are conformed to this mode of existence, preserve only the length necessary to this new condition, and contract a degree of stiffness which prevents them from accommodating themselves to the changes, which are required by the movements of the articulation. The muscles, left in a state of inactivity, are enfeebled, and lose their disposition to undergo contraction. With this weakness are united a degree of retraction and stiffness, which the same attitude, long continued, communicates. If to this it be added, that the want of exercise and the slowness of circulation, which is its consequence, give rise to a doughiness of all the soft parts which surround the articulation, an idea may be formed, he argues, of the effects of immobility, and of the manner in which it produces Ankylosis.

In this unmoved state of an articulation, M. Boyer further observes, if a certain degree of inflammation attacks the synovial membrane and the articular surfaces, these surfaces may contract a mutual adhesion, similar to that which takes place between the serous membranes and the organs which are enclosed in them, in inflammation of these parts. This mode of union of the articular surfaces, observed several times by John Hunter, produces a true Ankylosis, which, however, should not be confounded with that resulting from ossification of the ligaments and consolidation of the bones, the surfaces of which, after being covered with fleshy granulations, contract mutually an intimate adhesion, which is consolidated by phosphate of lime, deposited in the substance of these granulations. In this last species of Ankylosis, the union of the bones is so intimate, that they form one and the same piece, and their movements are for ever destroyed. In the first species their union is much less firm; and if by any effort they are separated, their movements may be re-established. An instance of Ankylosis of the elbow, mentioned by the Dutch surgeon Job a Meekren, he thinks, probably depended on this sort of cohesion.* This Ankylosis had resisted the effect of fomentations and cataplasms. The patient suffered a violent fall on the forearm; and from that time the movements of this part were re-established, and became daily more easy and more extended.

From the account now given of the mode in which ankylosis takes place, M. Boyer thinks it must be easy to see how the several diseases by which it is preceded contribute to its formation.

1. Fractures, the most simple, leave always after them, in the articulations of the member in which they are seated, some degree of stiffness, and which may be carried so far as to deserve the name of Ankylosis. When fractures take place near a joint, the stiffness which the latter contracts, is much greater, because, in addition to the effects which necessarily result from the immobility of the part, the inflammatory swelling, more or less considerable, which constantly ensues round fractures, extending to the joint itself, increases the thickness and firmness of the ligaments and the other soft parts by which it is surrounded, and deprives them of the pliancy necessary to the free exercise of the movements. If in this case any accidental circumstance retards the formation of callus, and requires the member to be kept in the apparatus during a period much longer than is ordinarily occupied in the consolidation of fractures, the rigidity of the ligaments, the tendons, and the other surrounding soft parts may be so great, that the re-establishment of the movements will be, if not impossible, at least extremely difficult. Further, the articular surfaces, entirely deprived of the synovia intended to lubricate them and maintain their contiguity, may adhere to each other, and the Ankylosis thus become complete and incurable. J. L. Petit, and all those who, like him, have ascribed to the synovia an important part in the formation of Ankylosis and in other diseases of the joints, have attributed the rigidity of the joints which accompanies fractures of the cylindrical parts of the long bones to the accumulation and thickening of this fluid. The dissection of articulations which have been rendered stiff in consequence of these fractures, shows that they contain much less synovia than in the natural state, but that it is still present; that it is

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* Obs. C. 64, p, 297.

not thickened; that the stiffness depends solely, as has been now said, on the state of the ligaments, the tendons, and the other soft parts surrounding the joints; and that the sole cause of their state is the long immobility in which the limb has been kept.

J. L. Petit ascribes the Ankylosis which ensues after fractures penetrating into the interior of joints, and of those very close to the joints, to the effusion of osseous juice within the joint in the first case, and around it in the second, and which then agglutinates the ligaments, incrusts them in some degree, and fills up the external cavities which serve to the play of the joint. This hypothesis, which is derived from the manner in which, formerly, surgeons explained the formation of callus by means of ossific liquor, accords neither with the results of experiments upon living animals on the manner in which fractures are united, nor with what is shown by dissection of joints which have been completely ankylosed in consequence of fractures penetrating into the interior of these cavities. In point of fact, surgeons have never found in this case, either in the articulation or in its neighbourhood, any osseous concretion dependent on the effusion and the condensation of this osseous liquid. It may be observed, nevertheless, that in the tenth volume of the Memoirs of the Academy of Surgery, p. 84, is recorded the singular instance of an irregular ossification in consequence of a fracture at the upper part of the thigh by a gunshot wound, and which ossification was regarded as the effect of irregular exudation of osseous liquid, condensed in the form of stalactite. It is easy to perceive, that if an ossification of this nature had taken place near a joint, it might impede the movements of that joint, and consequently cause Ankylosis.

2. Luxations may produce Ankylosis in several modes. As the free exercise of the articular movements depends on the just relation of the articular surfaces, it is easy to understand that, if a luxation is not reduced, the movements of the displaced bone must either be abolished or greatly impaired. In unreduced luxations of the orbicular articulations, the movements of the displaced bone are at first almost entirely impracticable; but subsequently this bone forms to itself a new cavity by the pressure which it exerts upon the parts against which it is supported, and then it becomes susceptible of certain movements, which gradually increase as time advances, and in proportion as the patient uses the limb. But these movements are never very extensive, especially if the luxation have been attended with very great inflammatory swelling. It is different, M. Boyer argues, with unreduced luxations of the ginglymoid joints. Of these complete Ankylosis is almost always the consequence, unless the patient be very young. In this last

case, if motions be communicated daily to the affected member, the surfaces by which the luxated bones touch each other assume at length a configuration which renders these bones susceptible of motion; but the movements which they undergo are in all cases very limited.

Luxations, though well reduced, may be followed by Ankylosis, especially those of the ginglymoid articulations. In this instance the Ankylosis is never complete, and it appears in the form of a degree of stiffness, which more or less constrains the movements of the articulation. This stiffness is the effect of the inflammatory swelling with which certain luxations are accompanied, and of the state of immobility in which this accident has required the member to be kept.

3. What has now been said on the false Ankylosis, which sometimes accompanies luxations which have been well reduced, is applicable to wrenches and sprains. In this lesion, the distension of the ligaments and of the other soft parts surrounding the articulation is very soon followed by inflammatory swelling, which forces the limb to be kept in a state of immobility. If this swelling is considerable, and if continued long, lymph may be effused; the ligaments, the tendons, and the other adjoining soft parts, will contract a degree of stiffness which will render the movements of the articulation so much more difficult, as the persistence of pain shall have required the patient to wait a long time before beginning to attempt to make the joint undergo its proper movements.

4. Wounds of the joints, articular dropsy, or rather its cause, synovitis, and White Swelling (which may be said to include synovial, capsular inflammation, and pericapsular inflammation, often give rise to Ankylosis among these diseases. M. Boyer thinks that the affection called White Swelling is the most frequent cause. At their commencement, he observes, swellings of this order are always accompanied with a degree of retraction of the flexor muscles, which keeps the limb in a state of the most perfect immobility; and when the swelling and pain are nearly dispersed by the use of suitable remedies, or by the efforts of nature, it frequently happens, by reason of the flexed position in which the limb has been long retained, that the use of the articulation is entirely lost, and that all attempts made to move it excite much pain. In this case, the immobility is so perfect, that the observer might be led to believe that it depends on intimate union of the articular surfaces with each other. But this union, supposes, he thinks, the destruction of the cartilages investing the articular surfaces, and the production on the extremities of the bones of granulations, by means of which these extremities are agglutinated together after the manner of the fragments of a

fractured bone. Such effects are rare in White Swellings; and when this takes place, it is only in a very advanced stage of the disease. The immobility referred to in this case depends solely, he maintains, on the retraction of the muscles and the rigidity of the ligaments and tendons, as is proved by the dissection of these parts in the persons of those who die, and the re-establishment of the movements by the long continued use of emollients in those who recover.

5. In scrofulous white swellings, however, M. Boyer adds, the retraction of the muscles and the rigidity of the ligaments and the tendons are not the sole causes of the immobility of the articulation. Enlargement of the extremities of the bones, he thinks, contributes also considerably to this result. Carried to a certain degree, this swelling destroys the exact relation which ought to subsist between the eminences and cavities which constitute the articulation, and the extent of the ligaments which surround and strengthen it. The latter having been shortened in relation to the enlarged bones, lock and fix them to so great degree that they deprive them of the freedom of moving.

The immobility produced by the retraction of the muscles, and by the rigidity of the ligaments and the tendons, with which almost all the forms of White Swelling are in their commencement accompanied, and sometimes also by the enlargement of the bones forming the articulation, ought to be regarded, M. Boyer thinks, only as a form of false Ankylosis, since the articulation is still capable of recovering its movements by the use of suitable remedies. He allows, nevertheless, that when the pain and swelling continue a long time, and if during this time it is impossible to communicate movements to the affected member, the articulation may lose entirely the faculty of being moved, and the Ankylosis may be complete, though no adhesion has taken place between the articular surfaces. This, he states, he has seen take place several times in consequence of rheumatic White Swellings of the knee. In this instance, the retraction of the flexor muscles is so forcible, that nothing can overcome it, and that these muscles, or their tendons, would be ruptured rather than be elongated.

6. True or complete Ankylosis may be the result of a white swelling, of a wound of the articulation, of articular dropsy, that is, *synovitis*, and in general of all the diseases of the joints in which the articular cartilages are destroyed, and the bones are carious. In this instance, if nature, properly seconded by art, can arrest the progress of the caries, the diseased portions of bones are exfoliated, granulations are formed on the articular surfaces, those of one surface are united to the granulations of the corresponding surface, and the bones thus contract an intimate union, which is afterwards consolidated by calcareous phosphate. An-

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fractured bone. Such effects are rare in White Swellings; and when this takes place, it is only in a very advanced stage of the disease. The immobility referred to in this case depends solely, he maintains, on the retraction of the muscles and the rigidity of the ligaments and tendons, as is proved by the dissection of these parts in the persons of those who die, and the re-establishment of the movements by the long continued use of emollients in those who recover.

5. In scrofulous white swellings, however, M. Boyer adds, the retraction of the muscles and the rigidity of the ligaments and the tendons are not the sole causes of the immobility of the articulation. Enlargement of the extremities of the bones, he thinks, contributes also considerably to this result. Carried to a certain degree, this swelling destroys the exact relation which ought to subsist between the eminences and cavities which constitute the articulation, and the extent of the ligaments which surround and strengthen it. The latter having been shortened in relation to the enlarged bones, lock and fix them to so great degree that they deprive them of the freedom of moving.

The immobility produced by the retraction of the muscles, and by the rigidity of the ligaments and the tendons, with which almost all the forms of White Swelling are in their commencement accompanied, and sometimes also by the enlargement of the bones forming the articulation, ought to be regarded, M. Boyer thinks, only as a form of false Ankylosis, since the articulation is still capable of recovering its movements by the use of suitable remedies. He allows, nevertheless, that when the pain and swelling continue a long time, and if during this time it is impossible to communicate movements to the affected member, the articulation may lose entirely the faculty of being moved, and the Ankylosis may be complete, though no adhesion has taken place between the articular surfaces. This, he states, he has seen take place several times in consequence of rheumatic White Swellings of the knee. In this instance, the retraction of the flexor muscles is so forcible, that nothing can overcome it, and that these muscles, or their tendons, would be ruptured rather than be elongated.

6. True or complete Ankylosis may be the result of a white swelling, of a wound of the articulation, of articular dropsy, that is, *synovitis*, and in general of all the diseases of the joints in which the articular cartilages are destroyed, and the bones are carious. In this instance, if nature, properly seconded by art, can arrest the progress of the caries, the diseased portions of bones are exfoliated, granulations are formed on the articular surfaces, those of one surface are united to the granulations of the corresponding surface, and the bones thus contract an intimate union, which is afterwards consolidated by calcareous phosphate. An-

kylosis ought then to be regarded as a means which nature employs in order to bring to a favourable termination a very severe disease, and one which most frequently causes the death of the patient, unless recourse be had to amputation. In this instance, also, well-informed practitioners, instead of endeavouring to prevent the union of the bones, employ all suitable means to promote this result, and they in general study to give the limb, when this is practicable, the position in which, when ankylosed, it may most usefully and easily perform its functions.

7. It is easy to conceive how an exostosis, an aneurism, or any tumour situate over or near an articulation, may, by furnishing a mechanical obstacle to its movements, produce a false Ankylosis; and how this Ankylosis may become complete, if this obstacle continues long.

8. Another mode in which Ankylosis, most usually false, is induced, is when any disease taking place in the vicinity of an articulation deprives these parts of their flexibility; the movements of the articulation become then more or less difficult, and sometimes even impracticable. When, for example, the formation of a large abscess formed over a ginglymoid articulation, covered by a great number of tendons, has destroyed the surrounding cellular tissue, these tendons contract adhesion with the neighbouring parts so close, that they yield only with great difficulty to the movements of the joint. This adhesion, combined with the thickening and rigidity of the ligaments which have partaken more or less in the inflammation, is a cause of Ankylosis not unfrequent.

The same result takes place when the skin and the cellular tissue surrounding an articulation have been destroyed by gangrene, or by a deep burn. In this instance, with the rigidity which arises from the adhesion of tendons and the thickening of ligaments, is associated that which is produced by the bridles formed by the scars.

Ankylosis, proceeding from adhesion of tendons, or the consequence of large abscesses, of gangrene, or of deep burns, is false or imperfect, and almost always yields to the resources of art. But when the tendons, totally denuded of the enclosing cellular tissue, and deprived of the vessels by which they are nourished, become dead and slough away, the movements dependent on the action of the muscles to which these tendons belong are entirely abolished, and are never restored. In this manner, in certain forms of whitloe, sloughing of the tendons of the flexor muscles is followed by immobility of the finger, which remains then in a state of permanent extension.

9. A ninth cause of Ankylosis, M. Boyer observes, is gout and gouty inflammation, or rheumatic gout, affecting the articular

tissues and apparatus. In gouty patients, he remarks, the articular ligaments are subject to tophaceous, silk-like, whitish, friable incrustations, and which contain a considerable amount of calcareous phosphate. Sometimes there are formed in them thick deposits of earthy matter similar to chalk, which are now known to consist mostly of urate of soda. These incrustations constrain the movements in a greater or less degree, sometimes even render them impracticable.

The bony matter may also be diffused in the substance of the articular ligaments, unite and agglutinate them to the bones, in such manner that the latter become absolutely immovable. The skeleton of aged persons presents often the ligaments of the bones of the pelvis, of the vertebral column, and of several ribs ossified to so great a degree, and the articulations so much obliterated, that they constitute only one single piece of bone. This ossification of the articular ligaments in decrepit old age, and which takes place especially in persons who are obliged to devote themselves to hard and severe labour in order to earn subsistence, cannot be regarded as a disease. Considerably different is that which takes place at an age sometimes little advanced, and which is the cause of those cases of general Ankylosis, several examples of which are found in authors. The most of the subjects of these observations had suffered for a long time under rheumatic pains in almost all parts of the body; and, as a consequence of these pains, the ligaments of almost all the articulations had become indurated and ossified, and the bones were so agglutinated at the joints, that the the skeleton of these individuals appeared to be formed of one single piece.

At another part (page 503) of the same volume, M. Boyer draws a correct distinction between the several forms of white swelling and idiopathic disease of the joints, and that which takes place in rheumatic gout. Some of the diagnostic marks might indeed be improved and rendered more precise. But he nevertheless shows that he had formed just notions of the nature and tendencies of the two disorders.

The diagnosis of Ankylosis, according to Boyer, rarely presents difficulty. The impossibility, or the almost impossibility, of causing any given articulation to make its wonted movements, as a consequence of some one of the diseases which may terminate in Ankylosis, is sufficient to distinguish this unnatural condition. It is not always, however, equally easy to determine exactly whether in any given case Ankylosis is complete and true, or false and incomplete. It is notwithstanding most essential to distinguish between these two species of the affection; because the first or true Ankylosis is absolutely incurable, and even to attempt a cure would in many cases cause great inconveniences; while false Ankylosis is almost always susceptible of cure, and because, by leaving it to itself, it terminates in becoming incurable, so that the patient is deprived of the advantages which might have been obtained, had he employed seasonably the means calculated to effect a cure.

True Ankylosis is always accompanied with immobility in the articulation, so that the member remains invariably fixed in the position in which it has been ankylosed, without our being able to make it quit that position, whatever effort is employed for the purpose; that is, the joint is either constantly bent at an angle more or less considerable, or it is extended immovably. But from the fact, that any given articulation can execute no movement in consequence of some one of the diseases which may produce Ankylosis, it cannot be concluded, that the bones of which it is formed are agglutinated, and consequently that it is completely Ankylosed. In point of fact, the rigidity of the ligaments and the retraction of the muscles are sufficient, as has been already shown, to prevent altogether the movements of an articulation, and to make it be thought that the bones by which it is formed are really united. As therefore the immobility of any given articulation is not a certain proof, that the bones forming it are united, and consequently that this articulation is affected by a complete and incurable Ankylosis, the surgeon requires the use of other signs in order to enable him to distinguish between these two species of Ankylosis. These signs are derived from the nature of the disease by which the loss of mobility has been preceded, from its duration, and from the circumstances by which it has been accompanied.

1. Ankylosis consequent upon fracture, if the fracture has been near the articulation, or has caused in the articulation great inflammatory swelling, is most likely to be complete. The long retention of the means of consolidation he thinks likely to contribute to the same result. This, however, we should regard as doubtful.

2. Ankylosis produced by white swelling (chronic *synovitis*, chronic capsular inflammation, velvet and brown degeneration of the capsule) is usually complete, especially when of long standing, and when it has been attended with caries of the bones, abscess, fistulæ, and other terminations.

3. Ankylosis, the consequence of ulceration of the cartilages, is usually complete. It is also complete in the following circumstances in the knee-joint. After inflammation, with pain and swelling of the knee-joint, the leg remains semibent upon the thigh, without external opening or suppuration; the patient is unable to use the limb; the joint is the seat of constant pain, which is aggravated during the night to a degree so great as to

prevent sleep, without larger doses of opium. The flesh is wasted, the strength is impaired; and amputation is performed, as the only recourse to procure to the patient permanent relief, and prevent what seemed to threaten her life. Upon examination of the joint, the whole synovial membrane and cartilage are found to be removed, from the head of the tibia, the convex part of the femoral condyles, and the articular surface of the knee-pan. The semilunar cartilages are gone. The ends of the tibia and femur are rough, with numerous minute irregular excavations. This surface is a deep red-brown, highly vascular. The bottom of the excavations presents a thin smooth membrane, which is extended over some of the ridges separating the excavations. The articular surface of the knee-pan is red, and presents a similar rough surface; but there the excavations are less deep. The bone is denuded of its natural covering of cartilage and synovial membrane, yet its *cancelli* are not exactly exposed, the membranous or pseudo-membranous covering already mentioned being extended as a covering over them. This is ulceration of the cartilages and extremities of the bones of the knee-joint.

The patient, a female of 27, recovered completely after removal of the joint by amputation.

6. Ankylosis, depending on agglutination of the bones in consequence of *Synovhymenitis* and Capsular disease (*Desmodia*), or a wound of the joint, and in general in all the articular diseases in which the bones are denuded and become carious,—is absolutely incurable. Agglutination and adhesion of the bones is in these circumstances a method which nature employs in order to bring the disease to a favourable termination; and, instead of attempting to prevent this result, all proper means should be employed to favour and promote it. Such are, repose and keeping the bones forming the joint in a fixed position. When it has taken place, it is of course equally undesirable to attempt to restore in any way the movements of the joint.

Quite different is the case with false or incomplete Ankylosis, which almost always yields in a degree more or less considerable to the resources of art, unless the disease has become very inveterate. The probability of cure, nevertheless, varies according to the species of articulation affected, the nature of the disease causing Ankylosis, and its duration. False Ankylosis, of the ginglymoid articulations is more difficult of cure than that of the orbicular articulations. When the disease is recent, it gives way more easily than when it is of long duration. Ankylosis resulting from mere prolonged immobility of a joint, without any direct affection of the surrounding soft parts, is more speedily and easily cured than that which depends on the same cause conjoined with swelling of the ligaments and other soft parts. It is also more easily cured in the young than in the adult and aged.

Considered in itself, and independently of the disease by which it has been induced, Ankylosis cannot be regarded, M. Boyer thinks, as a dangerous disease, since it exercises no influence upon the animal economy. From this character he excepts Ankylosis of the lower jaw, which, by preventing the patient from taking solid food, may throw him into a state of wasting and marasmus.

There is, nevertheless, something too general in this deliverance upon the supposed harmlessness of Ankylosis. When the disease attacks the vertebræ, which it sometimes does, it may be the cause of immediate or speedy death, as any sudden motion or violence coming upon the ankylosed vertebræ may fracture them, and concuss and injure the spinal chord so much, as to induce death either quickly, or in no long time. Even in the articulations of the extremities, its effect upon locomotion is so considerable, that it not only impairs health by preventing exercise, but, as the ankylosed joint is always less strong than the sound one, it is much more liable to injury, and injuries produce upon it much more serious effects than upon a joint in its normal state.

M. Boyer concludes, that the only form of the disease admitting of treatment, is that designated as false or incomplete; and to this only, he thinks, treatment should be confined. His remedial measures are very much the same as those enumerated by Monteggia; and indeed surgeons have generally, on this subject, copied from each other. He recommends, indeed, the use of the mineral waters of Bareges and of Bourbonne, either in bath or in douche; and among the friction agents, the use of cold drawn olive oil is strongly commended, not only over the affected joint, but over the whole limb or limbs in which the ankylosed joint exists.*

Very similar, though delivered in a more succinct and abridged form, are the distinctions and observations of Richerand on this lesion. The distinction of Ankylosis into true and incomplete is not purely nominal. It forms the foundation of the therapeutic treatment peculiar to the disease. When the agglutination of the articular extremities is complete, the loss of movements entire, it would be dangerous, although the direction of the member were inconvenient, to destroy the Ankylosis by breaking the adhesions. This painful operation would induce inflammatory symptoms which would renew the ankylosed state, and, still more frequently, would terminate in caries, an affection more severe than that of stiff-joint itself. Since, therefore, Ankylosis is the unavoidable consequence of disease, and may itself be regarded as a favourable termination of articular disease, there is no alternative but for the surgeon to take care to give the bones, the extremities of which are tending to union, a suitable position. For instance, in the inferior extremities, extension of the bones should be observed when Ankylosis is taking place in the hip-joint or knee-joint. The phalanges of the fingers in which the tendons have sloughed away, are usually inflected, as flexion of these parts is much more favourable to the different uses of the hand than would be permanent extension. Semiflexion is believed to be the most favourable position for the elbow-joint in a state of Ankylosis.*

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* Traité des Maladies Chirurgicales, Tome quatrieme, seconde edition. Paris, 1818, p. 553, Chapitre, xxi. p. 553–571.

In 1833, Mr W. J. Wickham of Winchester published a short treatise on Diseases of the Joints, in which he communicates much valuable practical information on these maladies, and their effects and modes of termination. Of course this treatise cannot be compared with the work of Sir Benjamin Brodie. But so far as it goes, the information communicated shows, that the author observes with his own eyes, examines a diseased joint with his own fingers, and deduces his own conclusions.

According to Mr Wickham, a joint becomes stiff from three causes; first, from muscular contraction; secondly, from deposit of lymph within and around the articulation; and, thirdly, from the effusion of bony matter.

The case of stiffness from simple muscular contraction, he thinks, is readily understood, when we know that the same muscular power is sufficient, by degrees, to dislocate the bones, all resistance to their action having been overcome by the destruction of the natural textures which hold the bones together. The same action is exerted to produce Ankylosis, and is effected by the same cause; it is the unremitting contraction of the flexor muscles, the extensors having become paralysed, or their power having been destroyed.

Mr Wickham expresses strongly, and rather confidently, the opinion that this is a frequent cause of Ankylosis; that the articular textures may be natural and healthy in appearance; and yet, from the wasting of the extensors and the incessant unopposed contraction of the flexors, the joint may become stiff and immovable. For details we refer to his work, at page 110 and subsequently.

Mr Wickham, nevertheless, admits that he wishes not to convey the notion, that in every instance in which Ankylosis has thus been effected, muscular action alone is the cause of the stiffness. He allows that with this is often combined a deposit from various textures, the natural effect of inflammation, and of itself enough to form an impediment to the free motion of the joint. Oftener, perhaps, than otherwise, he adds, this combination of morbid deposit and muscular contraction exists.

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* Nosographie et Therapeutique Chirurgicale, par M. le Chevalier Richerand. Cinquieme Edition. Tome ii., pp. 341, 342. A Paris, 1821, 8vo, Vol. xli. p. 341.

The second form of Ankylosis, according to Mr Wickham, is that which, being still generally accompanied by rigid muscular contraction, is the result of effusion of lymph within and among the various structures of the joint; the effect of continued inflammatory action which has not proceeded to the suppurative and disorganising state; the parts becoming thickened and agglutinated together in such a degree as to prevent the motion of the joint. This state, he adds, from being in some degree partial, forms the ***False Ankylosis*** of systematic writers, to distinguish it from the true and complete Ankylosis which arises from the union of the bony surfaces of the joint.

The instances which he enumerates as affording examples of this form of the lesion are, the inflammation ensuing on wounds penetrating into the articular cavity; after fractures into joints; and repeated attacks of gout and rheumatism, which, for the time they are present, possess an active rather than a passive character. In gout, he regards the chalky matter, or urate of soda, along with the inflammatory thickening, as sufficient to induce complete stiffness. This result, he thinks, is more frequent in gout than in rheumatism, in which, however, he has witnessed its occurrence.

The third form of Ankylosis, admitted by Mr Wickham, is that in which the joint is rendered stiff by the effusion of ossific matter from the exposed surfaces of the bones, and by which the articulation becomes consolidated.

This Ankylosis by bone he regards as caused by the luxuriant deposit in the natural course of nekrosis, and by the inconvenient situation of an exostosis; and also by the exposed surfaces of the bones under disease. This, however, he regards as of comparatively rare occurrence; because, before any reparative process in the bone begins, the local disorganisation is so considerable as to undermine the general health and cause death, unless the diseased joint is removed by amputation.

He infers, therefore, that bony Ankylosis is more commonly the effect of accident and injury than of spontaneous disease.

This view regarding bony Ankylosis is to a certain extent correct. It is not very commonly the result of merely diseased joints, though partial ankylosed unions may take place in the manner in which Mr Mayo has pointed out, in the progressive disorganisation which takes place in the course of disease of the articular tissues.

In March 1834, Mr Herbert Mayo communicated to the Royal Medico-Chirurgical Society a paper containing Observations on Ulceration of the Cartilages of the Joints, and on Ankylosis, in which that experienced surgeon adduced several interesting examples of articular disease, illustrating the course and tendency of the morbid processes upon the articular cartilages, and especially those forms of destruction and disintegration of the cartilages to which the names of absorption and ulceration have been applied.

From these observations it appears,—1st, That absorption of articular cartilage may commence at its synovial aspect; most likely in connection with inflammation of the synovial membrane; and that in the course of this process one portion of the osseous part of the joint,—for instance, the knee-pan,—may become firmly agglutinated either to the femur above or to the tibia below;—2d, That chronic ulceration of an articular cartilage may begin upon its synovial aspect, and produce there an irregular excavated surface, with fibrous or brush-like projections of the cartilage and synovial membrane, accompanied with inflammation of the capsular synovial membrane, and sometimes of the reflected portion of the synovial membrane; the bone and the attached surface of cartilage, however, remaining healthy;—and 3d, That absorption of articular cartilage may commence in the osseous or adherent surface of this cartilage, accompanied with inflammation of the adjacent surface of the bone, with inflammation of the synovial membrane, and sometimes with perceptible vascularity of the cartilage itself.

In the course of the examination of the instances of articular disease on which Mr Mayo founded these distinctions, he had occasion to make some observations on the process of Ankylosis, the forms of which he was accordingly led to distinguish in the following manner.

Mr Mayo infers that there are three varieties in the mode in which the ends of bones become united, after partial or complete absorption of their natural articular surfaces.

One of these is *bony* Ankylosis, in which the ends of the bones become united after the complete removal of the cartilages and synovial membrane.

A second is *cartilaginous* Ankylosis, in which a junction takes place between surfaces, both of which are cartilaginous, but have undergone superficial ulceration.

The third may be called *mixed* Ankylosis, in which a surface of cartilage that has undergone superficial ulceration, is united to a denuded surface of bone.

These distinctions, Mr Mayo allows, refer to differences rather in the nature of the surfaces that become united, than in the process of union. In each of the three kinds, it may be proved or rendered very probable, that an exudation of coagulable lymph adhering to the surfaces which are in apposition first glues them together mechanically, and afterwards becomes an organised medium of union. The layer of lymph is of very variable thickness. When complete bony Ankylosis takes place between two articular extremities, as the humerus and ulna, they sometimes form one bone, as it were, without break or line of interruption or discontinuity of osseous structure.

Of this mode of union numerous specimens are preserved in museums and pathological collections. Some good examples are represented in Delineations published in 1830, in order to illustrate diseases described in the Surgical Dictionary of Samuel Cooper.* In several of these specimens caries of the ends of the bones had taken place, and probably a deposit of new bony matter subsequently. An important remark, nevertheless, is made by Mr Mayo, that, in one instance in which this sort of complete bony junction had taken place, the interior of the bones was perfectly healthy, but the surfaces to which the lymph adhered were, for the depth of one or two lines, extremely vascular. With this vascularity was combined the roughness of surface and softness of texture described as found upon the articular aspect of bone in the third kind of ulceration of cartilage specified above. From this Mr Mayo draws the conclusion, that bony Ankylosis may, under favourable circumstances, take place after that form of ulceration of cartilage which depends upon inflammation of the adjacent surface of the bone.†

It appears, in short, from the observations of Mr Mayo, that, whether the cartilages are only partially or wholly removed, or even not removed at all, lymph is, in all these cases, effused, and forms the principal medium of the connection.

All the three forms now noticed by Mr Mayo must be regarded as examples of complete Ankylosis, or that form of stiff-joint in which the articular ends of the bones are so firmly and indissolubly agglutinated, that the motions can no longer in any degree be restored.

In the translation of the System of Surgery, by J. M. Chelius, Mr South has given in his notes and commentaries probably the most learned and ample account of the etiology and pathology of Ankylosis extant in the English language.

Mr South is rather disposed to disapprove of the division of Ankylosis made by John Hunter. First, with regard to the frequency of what is called *Soft Ankylosis, firm granulations,* and which seems to correspond with the false and incomplete Ankylosis of foreign surgeons, following suppuration, Mr South feels assured, from repeated observation, that soft Ankylosis is produced by the adventitious membrane poured out (formed during inflammation of the synovial membrane), which, as Mr Key states, "produces ulceration of the contiguous cartilage; and when the cartilage has been wholly absorbed, and when the ulcerative process has been checked by the inflammation being arrested, serves another purpose; that is, it becomes the medium of union between opposed surfaces of bone, or the means of Ankylosis. Long after all inflammation has subsided, one of the condyles of the femur is often found adhering to the tibia by means of this membrane, which appears white and ligamentous, a layer of cartilage often remaining between the membrane and the bones, as if the process of ulceration had been arrested." *

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* Illustrations of Mr S. Cooper's Surgical Dictionary. Plate K, 37 *d.*

† Observations on Ulceration of the Cartilages of the Joints, and on Ankylosis, by Herbert Mayo, F.R.S., &c. Medico-Chirurgical Transactions, Vol. xix, p. 48, &c. London, 1835.

Most commonly, Mr South thinks, when soft Ankylosis, so originating, is completed, no suppuration within the joint takes place; and when this does take place, it results from recent inflammatory action, assuming the suppurative character, and induced by external violence, which, destroying the cartilage down to the bones, the latter also ulcerate; and then, if there be sufficient constitutional power, the bones produce the granulations; and these inosculating, union of the opposed surface is produced (Mr Mayo's case) as in compound fracture, by deposit of earthy matter in the granulations, and thus bony Ankylosis is effected.

Mr South is unable to say whether the fibrous or soft Ankylosis be the first step to bony Ankylosis. From two cases which he adduces, it appears to result, that they are distinct. † He allows, on the other hand, that facts show that these two modes of conjunction may co-exist in the same joint. ‡

"*Bony Anchylosis* may occur in any joint, either by the conversion into bone of the cartilages forming symphyses, as in those connecting the pelvic bones together, which can scarcely be called disease,—1st, by the conversion of ligament and fibro-cartilage, as in the anterior and crucial ligaments, and the intervertebral substance of the spine, which scarcely at all differs from ossification of the symphyses just mentioned, instances of which are far from uncommon in elderly persons as regards all the vertebræ, except the two uppermost, which, however, in very rare cases, are also in like manner not only united by bone to each other, but also to the occipital bone, of both which conditions we have examples in St Thomas's museum; in these the articular surfaces have been deprived of their cartilages either by ulceration or ossification, and the true joints destroyed by bony union: 2dly, by conversion of the ligamentous capsules alone into bone, the contained joints still existing; this occurs in the capsules of the articular processes of the vertebræ, and is not to be confused with that just mentioned.

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* Medico-Chirurgical Transactions, Vol. xviii. pp. 224–226.

† A System of Surgery, Vol i. pp. 244, 245.

‡ Ibid., p. 245.

I am not aware that it happens on any other joints. One or other, or all these forms together, are found in elderly persons.

"But the most important form of bony anchylosis is that which I have mentioned above, and produced, as I believe, from the granulations of the joint-ends of bones, the cartilaginous covering of which, as well as the articular surfaces, having been destroyed by suppuration, whether arising from acute or from scrofulous inflammation; and thus circumstanced, 'the two bones,' as John Hunter observes, 'united into one exactly similar to compound fracture.' This kind of anchylosis is undoubtedly most common in the hip-joint, where the inflammation seems to run more readily into suppuration than in any other joint; it is next frequent in the bones of the wrist and instep, but least usual in the elbow, knee, and shoulder; indeed, as regards the latter, anchylosis is, under any circumstances, rare. Instances of anchylosis, even of the lower jaw to the temporal bone, have been mentioned by the older writers; and of late, Cruveilhier* mentions the case of an old woman who had anchylosis of the right condyle of this bone, the result of a blow received when a child.

"In these cases the greater part, if not the whole, of the articular surfaces are removed, and the cancellated structure seems continuous from the one to the other bone.

"Other kinds of anchylosis are mentioned, as where bones are fractured into joints; but, so far as my observation has gone, I have not noticed this fact. It is quite true that often, when a fracture extends into a joint, the motions of the latter are destroyed, but this generally depends on the displacement of the joint surfaces."—Pp. 246, 247.

Lastly, Mr South disapproves of the usual division of Ankylosis into true and false. This division he regards as to a certain extent incorrect and objectionable, because, in the so called false Ankylosis, the hindrance of motion is only to be considered as a symptom of the disease, towards the removal of which the plan of treatment must be directed, and the union of the joint-ends of the bones is alone to be considered as the actual disease.†

The truth is, that Mr South is almost the only one who has directed attention, even in the cursory manner now mentioned, to the impropriety of the use of the terms true and false Ankylosis. Correctly and logically speaking, false Ankylosis is no Ankylosis at all. It is in all the instances that degree and form of immobility or impaired mobility of a joint which ensues, in consequence of more or less disease, most usually inflammatory, in the articular tissues; the capsule, the lateral or round ligaments, if there are any, the synovial membrane, whether capsular or that reflected over the articular surfaces or the cartilages; and which is partly the effect and consequence of the inflammation, partly the means by which the inflammatory effects are prevented from being aggravated. When the inflammation has subsided, or has been subdued, the movements of the joint return in some degree, in some instances to a great extent, in others completely.

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* Anatomie Pathologique, livr ix.

† System, &c. Vol. ii. p. 310, parag. 1567.

The degree and extent, however, to which these movements shall return, depend always on the circumstances of the articular tissues having received and sustained a small amount of injury. If the injury is considerable, that is, if the synovial membrane has been made to adhere extensively and over many points, if the cartilages be destroyed, then the power of movement does not return, and the joint is ankylosed.

We have thus attempted to place before our readers as much as seems to be at present known, or satisfactorily understood, regarding the nature of Ankylosis. The difficulty in the use of the term is admitted on all hands; but the means of affording a remedy are not so generally agreed on. "The etymology of the term Ankylosis," says Sir Benjamin Brodie, "does not justify the sense in which it is commonly used; but I do not undertake so great a task as that of reforming anatomical and pathological nomenclature. Indeed, the substitution of new terms for those which have been long in use, is productive of so much inconvenience, that, except under some peculiar circumstances, it is better that it should be avoided."*

It is clear that Sir Benjamin Brodie thinks that the application of the term Ankylosis to the order of cases called false Ankylosis is improper. But as the reserve of this eminent surgeon ought to be imitated by others, after we have given the above explanations, we must leave readers to form their own conclusions.

Dr Little adheres to the division followed by the Continental surgeons, of distinguishing Ankylosis into true and false; and it may tend to convey some idea of his mode of viewing the lesion, in reference to treatment, to place before the reader the following table, in which he enumerates the causes of the various forms of Ankylosis of the knee, in the order of their severity. He allows that the enumeration may be incomplete. But he gives it as including the causes of every variety that has fallen under his observation, and as serving to illustrate the causes of Ankylosis in other articulations.

"*Ankylosis, false and true, each subdivided into angular and straight.*

"FALSE ANKYLOSIS.

"(*a*) Angular :—

"1. From strumous synovitis, from inflammation produced by mechanical injury, and erysipelas succeeded by phlegmon, terminating in *thickening of structures in and about the articulation and muscular contraction.*

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* Pathological and Surgical Observations on the Diseases of the Joints, by Sir B. Brodie, p. 50. Fifth Edition. London, 1850.

"2. From abscess exterior to the synovial membrane, followed by *reunion of parts, unnatural adhesions, contraction of muscles.*

"3. From rheumatic and gouty inflammation, producing *induration and adhesion of tissues, from effusion of lymph,* with or without *incipient calcareous deposit, muscular contraction.*

"4. From strumous *synovitis,* or white swelling, ending in *disorganisation of ligaments, muscular contraction, partial luxation of articular extremities, caries.*

"5. Inflammation and suppuration within the synovial membrane communicating with the exterior, *destruction of ligaments, membranous adhesions within and without the articulations, muscular contraction, partial luxation, attrition of cartilage and bones.*

False compound ankylosis.

"(*b*) Straight:—

"1. From abscess resulting from inflammation, preceded by mechanical violence, or erysipelas, terminating in *adhesions, muscular rigidity.*

"2. From strumous disease, suppuration, and necrosis of shaft and condyles of femur, *unnatural adhesions, effusion of ossific matter in the popliteal region, rigidity of anterior muscles of the thigh.*

"3. From fracture.

"TRUE ANKYLOSIS.

"(*a*) Angular:—

"1. From chronic strumous disease, inducing ulceration of cartilage and bone, destruction of ligaments, and bony union, luxation.

"2. From acut einflammation, traumatic, phlegmonous, erysipelatous, or rheumatic, followed by suppuration within the synovial membrane, either communicating with the exterior or not, *destruction of cartilage, osseous union between the articular surfaces.*

"3. From gouty inflammation, *without external suppuration, calcareous deposit uniting articular surfaces.*

May be combined with luxation, and constitue true *compound* Ankylosis.

"4. From fracture.

"(*b*) Straight:—

"1. From fracture.

"2. From rheumatic inflammation."—Pp. 12, 13.

On the subject of the morbid anatomy of Ankylosis, the following description is given.

"The morbid anatomy of ankylosis is really that of diseased joints in general; and, as an apology for the omission of much that it may be supposed should properly be inserted, I may mention that the morbid anatomy of diseased joints appropriately belongs to the consideration of the nature of those diseases, which is equally beyond the scope of this treatise. With these views, I shall consider so much of the morbid anatomy of ankylosis as may assist in distinguishing the true from false, and investigate the nature of false ankylosis as far as essential to diagnosticate the amount of alteration of the articulation, and deformity which is remediable or irremediable. We have further to learn from it the abnormal conditions of tissue, the removal of which is indispensable for the restoration of the form and functions of the part. The observations on the causes of ankylosis have, in some degree, anticipated the considerations on its morbid anatomy; thus the agency of inflammation has been traced, in its simplest effects producing the slightest false ankylosis, to its most destructive consequences, and bony union of the articular surfaces. The distinction of Synovitis, Synchondritis, Chondritis, articular Osteitis, is of importance to the surgeon in guiding him in the choice of remedies; yet the tendency of each of these inflammations to produce the others in unfavourable constitutions, which are those most affected with these diseases, is so great, and the passage of chronic into acute inflammation so frequent, that, instead of considering their individual relation to ankylosis, we have chiefly to survey the general effects of inflammation.

"The effects of inflammation upon the tissues in and about an articulation are perfectly similar to those of other structures. Whatever difference exists, arises from the circumstance, that certain active agents, numerous muscles, held in antagonism as long as the part remains in health, obtain the mastery over the articulation when diseased, changing the relation of its component parts. We have described as a cause of the simplest form of false ankylosis, inflammation succeeding mechanical injury, terminating in thickening of parts and muscular contraction. Here the inflammatory process has subsided, interstitial deposit of lymph into the cellular and fibrous tissues having moulded the exterior of the joint into the form it had assumed from the muscular contraction; when abscess exterior to the joint has ensued, adhesions constituting the uniting medium of the parietes of the abscess add to the rigidity which the interstitial deposit of lymph and muscular contraction had already created. These adhesions, which, if exposed to motion, as those connecting the pulmonary and costal pleura are, when the function of the lung remains, would be of cellular nature, soft and yielding, become dense and fibrous when the part is fixed; precisely as in the adhesions of the lung to the ribs, when contraction and immobility of the thorax has taken place, the uniting medium is rendered fibrous, and even fibro-cartilaginous. After a time, when completely organised and adopted as part of the organ, the adhesions arising from abscess in the vicinity of an articulation become as dense and unyielding as the articular ligaments themselves, and, as already observed, impede the movements of the joint more or less according to their situation. The popliteal region, for example, the most frequent seat of suppuration exterior to the knee-joint, is sometimes filled up with a mass of this adventitious tissue, so dense, that when other obstacles have been removed, it may alone occasion immobility of the joint. Sometimes bands, stretching across the ham from one projecting point to another, offer resistance equal to ligament. But more commonly, even when suppuration has not occurred, the fasciæ of the part form a framework on which the adventitious matter is applied, and being at the same time thickened by interstitial deposit, they may oppose an insurmountable resistance to extension. This circumstance induced my friend Professor R. Froriep* to suppose that false ankylosis of the knee was principally dependent on contraction of the *fascia lata* expanded over the lateral and posterior parts of the joint. On the anatomical examination of cases of this nature, he found that, after section of the muscles, the articulation was still maintained rigidly flexed, and extension could only be effected after division of the fascia. He believed the contraction of the muscles to be of secondary importance. An examination of false ankylosis before and after death affords very different results. The tension of muscular fibre ceases quickly after the cessation of life, decomposition speedily renders the previously contracted muscles susceptible of elongation; but the fasciæ and ligamentous structures long resist its influence, and, by continuing tense, may impose the belief that they alone were primarily interested.

" When the inflammatory process commences in, or extends into, the interior of an articulation, the usual effects of inflammation arise, increased in destructiveness by the nature of the part, and the extent to which its function is interrupted. The organisation of the synovial membrane, the capsular and other ligaments, is in the first instance affected, their firmness is diminished, they are softened, and yield to the extension produced by the fluid effused into the cavity. The laxity of the connections by which the articular surfaces are maintained in relation may be so great as to permit free movement of the bones in improper directions; the muscles, therefore, on the flexed side of the articulation, having obtained the preponderance over the extensors in the manner previously described, gradually draw the bones into which they are inserted from their natural position, and produce partial luxation. *Compound* false ankylosis is daily produced in this manner, without external suppuration. If the inflammation have subsided without this extensive mischief, lymph may have been effused, and constitute loose adhesions between the opposite surfaces of the bones, not calculated materially to impede movement; or the whole articular cavity may be filled with cellulo-fibrous adventitious tissue, rendering the movements obscure and difficult.

" In other cases, the deposit of calcareous matter and true ankylosis takes place in obedience to the pathological law, that the plastic matter effused as the result of inflammation becomes transformed, in the process of organisation, into a tissue similar to that of the organ into which it is effused, or which it abnormally connects. Thus, lymph effused into the anterior of an articulation from ordinary inflammation, which has left the cartilages intact, constitutes, on becoming organised, 'membranous adhesions,' *i. e.* cellular filaments, resembling in structure the synovial fringes naturally existing in the part. But when the cartilages of opposing articular surfaces are destroyed by ulceration, the intervening organisable lymph

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" * Chirurgische Kuptfertafeln, No. 346.

undergoes a more considerable transformation, and, in obedience to the law above mentioned, receives into its tissue fibrous and calcareous particles, and is converted successively into ligamentous tissue and 'new bony matter' (*l'ankylose par intermède.*) More frequently, after removal of the cartilages, bony union succeeds with so little appearance of deposit of intermediate new matter, that 'fusion' of the articular surfaces is said to have occurred (*l'ankylose par fusion.*) In other instances one articular surface only is denuded of cartilage: in this case, if bands of adventitious tissue connect the opposing surfaces, it will be found that an effort to effect the osseous transformation of the adventitious tissue has been made, that fibrous and osseous matter has been deposited in that part of it which is connected with the denuded bone, constituting the cartilaginous or osseous vegetations often seen sprouting from diseased bones; but this effort at osseous transformation, meeting with no reciprocal effort from the opposite surface, falls short of producing complete ankylosis.

"The adventitious osseous matter is sometimes so abundantly effused on the exterior of the articular surfaces, that a strong lamina of bone, forming a species of splint, connects the bones, and effectually renders them immovable. This kind of complete ankylosis is described by Cruveilhier under the term *l'ankylose par invagination.* The knee and elbow frequently illustrate this condition."—Pp. 13–19.

The causes of all this mischief are various, but they have been generally referred to some form or degree of inflammation; and this view Dr Little adopts very much as other writers have done. He nevertheless enters more minutely than most previous authors into the peculiar mechanism by which, in each form, the immovable and contracted state of the joint is brought about.

It is well known that in most ginglymoid joints, as the knee and elbow, there exists a strong tendency to the bones composing the joint assuming the inflected position; and it is also known that this has been commonly ascribed to the greater power which the flexor muscles possess and exert than the extensors. This Dr Little is disposed to deny, and he thinks, that the influence of continuance of the limb in a certain position for a considerable time is quite adequate to explain the phenomena of inflexion. He thinks that in the case of the knee-joint it can scarcely be conceded that the proper flexor muscles of the joint, the biceps, and semitendinosus and semimembranosus, are so much more powerful than the extensors,—we suppose the *cruræus*, the *rectus*, the *vastus internus*, and *vastus externus*,—as to suffice for the explanation of this preponderance. The bent position being assumed, he observes, the greater length of the fibres of the flexor muscles of the knee, and the freedom of their course, from origin to insertion, enables them to shorten themselves to a greater extent than is possible in the extensors, the *rectus femoris* excepted, owing to the difference in their anatomical arrangement.

In further explaining the reason of the instinctive preference given to the bent position of the knee-joint in the majority of instances, Dr Little remarks, that not only in this position are the greater proportion of the muscles of the extremity relaxed, but the extension of the synovial sac admits of greater amplitude in this position, and the contents consequently press less forcibly on the inflamed parts. In one word, all the parts are rendered greatly less tight, and those especially on the anterior part of the joint, where its bony parietes offer greater resistance.

Dr Little appears indeed to ascribe fully as much influence in producing contraction and inflexion to the action of the muscles as Mr Wickham.

Arthritic inflammation, including under this name both rheumatism and gout, more frequently induces complete immobility of the joint or joints than any other disease. This form of inflammation appears to be followed by a greater degree of induration and rigidity of the articular tissues than any other, and with much proneness to calcareous or ossific deposit around and between the articulating surfaces.

Destruction of cartilage by a process similar to ulceration, but on the nature of which much diversity of opinion among pathologists is entertained, and without any indication of a reproductive process, occasionally co-exists with Ankylosis, and particularly with compound Ankylosis, that is, Ankylosis with luxation, partial or complete. This state may occur in any joint, but is most common in the hip-joint, and, next to that, in the knee-joint, in which the tibia is unnaturally rotated or twisted outwards.

Attrition of cartilages, or the wearing away of these bodies, effected by the mechanical friction of the bones on each other, occasionally co-exists with incomplete Ankylosis. By some pathologists this attrition is supposed to take place independent of any morbid process; but this seems not very likely. It can hardly be supposed that any texture like cartilage would be worn away unless under the influence of some morbid action. The occurrence of attrition in the cartilages and bones of the aged, after long-continued Ankylosis, Dr Little ascribes to the diminished vitality of these structures, as life advances.

The eburneoid, or ivory degeneration, he ascribes to the deposition of calcareous matter in the cancellated tissue of the denuded bone, by means of which its density and capability of resisting, abrasion is increased.

The diagnosis of Ankylosis from other affections of the joints is, according to Dr Little, not difficult. He thinks it impossible to mistake immobility from acute inflammation for stiff-joint; and he adds, that, in the absence of constitutional symptoms, the local swelling and effusion, with probable increase of temperature, would remove all doubt. Certainly this may be the case as to acute inflammation; but as to chronic inflammation of a joint, which is by far the most common case, the difficulty would be not inconsiderable. Dr Little allows that Ankylosis may have commenced before the subsidence of inflammation; and if this be true of acute and sub-acute inflammation, it is greatly more so of chronic inflammation, the transition from which to Ankylosis is in the largest proportion of cases insensible. In such circumstances, the great object of the practitioner must be to subdue and remove the residual inflammation, and placing the limb in a proper position. In such circumstances we have occasionally seen the apparent stiffness and supposed Ankylosis disappear as the inflammatory state was removed.

" The distinction of true from false ankylosis is often difficult. The previous history of the case may assist our judgment. Where, for example, absolute immobility has succeeded inflammation produced by mechanical violence, we may conclude that true ankylosis exists. The deformity resulting from *white swelling*, on the contrary, is usually incomplete ankylosis. Tact in the examination of such cases often enables the experienced practitioner to detect mobility where none was believed to exist, and effect the restoration of a limb previously condemned to uselessness, and regarded as an incumbrance. The production of pain, or a sensation of tightness on the flexed side of the limb by manual attempts at straightening, is often an indication of incomplete ankylosis. But a much more delicate test is the production of pain on the opposite side. It has been stated, that the patient affected with true ankylosis permits examination without apprehension of pain, whereas, in false ankylosis, the individual mistrusts the manipulation of the practitioner. This assertion is founded on the circumstance, that pain cannot be produced in one case by forcible attempts at straightening; and that, in the other, an instinctive feeling of weakness in the part exists. Great reliance cannot be placed on this mode of diagnosis. Patients labouring under false ankylosis have usually as little apprehension of examination as those affected with true ankylosis, unless they may have already been subjected to painful investigation; and a delicate nervous female would be sensitive to impressions, whether affected with complete or incomplete ankylosis.

" It is scarcely necessary to mention, that in a supposed ankylosis, the practitioner should be quite certain no tenderness of the articulation from the previous inflammation remains. A completely ankylosed limb also conveys to the hand of the examiner a sensation of union throughout; the tibia and femur in true ankylosis of the knee give the impression of a single bone; and many of the patient's sensations in the limb are referable to a want of elasticity, which is not absent in false ankylosis even when no motion is *visible*. Thus, in true ankylosis of hip or knee, the patient is more susceptible to shocks consequent on any sudden exertion;—the whole frame may be jarred by an unexpected false step. This is in great measure obviated by the flexibility of the ankle, and powerful action of the gastrocnemii; for, as in ankylosis of hip or knee the joint is usually flexed, the patient is compelled to apply the toes only to the ground, and the elasticity of the gastrocnemii may, in some degree, compensate for the stiffness of the affected joint."—Pp. 28, 29.

In the application of pathological facts and principles to treatment, Dr Little shows every wish to place the management of cases of Ankylosis, in attempting the restoration of the motions of the joint, upon sound, practicable, and safe principles. The restoration of the movements is to be accomplished, or at least attempted, by mechanical and surgical means, employed singly and conjointly, according to the circumstances of each case, and the effect of the means employed. In that large proportion of cases of false Ankylosis, in which the rigidity depends on muscular contraction without structural shortening, and with little adhesion of the tissues in the inflected aspect of the joint, restoration of motion, he thinks, will be effected under the agency of the first class of remedies, namely, mechanical means. These are frictions and passive movements. In higher degrees of rigidity, practitioners add the use of steam and vapour baths, oleaginous embrocations, fomentations, shampooing, and the application of mechanical instruments, in order, as we understand, to effect forcible straightening of the joint.

When means of this kind fail, supposing that all measures have been steadily and diligently carried into effect, in order to remove the cause or causes of Ankylosis, such as inflammation in any active form, then the time is believed to be arrived for the employment of those surgical and mechanical measures which Dr Little recommends, in order to effect the restoration of the movements of the joint. These consist in the subcutaneous section and division of the tendons, of the muscles, probably of the fasciæ, according to the method of Stromeyer, and the subsequent reduction of the joint to its normal position and its natural movements, by the application and use of proper mechanical contrivances. The limb is to be extended in bent or incurvated Ankylosis, and to be inflected in straight Ankylosis; the progress of this part of the treatment being slow or rapid, according to the size of the joint affected, and the degree of dependence of the resistance to restoration on the superficial or deeply seated tissues surrounding the articulation. In general, this latter part of the treatment is lengthened, if not tedious. The length of time requisite to effect a cure varies from one week to six months;

and, in certain cases, a much longer period elapses before the articulation entirely recovers its functions.

It is well known that forcible means of curing Ankylosis have been practised by various persons. It has all along been a favourite method with those who professed to restore the motions of stiff joints by means of shampooing, rubbing and extension in the warm and vapour bath, percussion, and other not very gentle methods. The effect of these measures has been not unfrequently to injure irreparably the ankylosed joint, to fracture one of the bones, to rupture blood-vessels, and to perpetrate other violent and serious lesions. It is a fact well known to those who take interest in these matters, that a person of some note, the late Mr Loudon, the author of the *Arboretum*, had his arm broken in attempts to straighten and restore forcibly the elbow joint, which had become bent and ankylosed in consequence of rheumatism. Nor was this gentleman the only individual who suffered from these harsh and unscientific methods of procedure.

Nothwithstanding these results, two regular professional practitioners pursued plans which must be regarded in the eye of reason as essentially the same, and liable to the same objections. M. Louvrier of Paris, one of these physical force practitioners, is or was in the habit of placing the ankylosed limb, carefully padded, in a mechanical apparatus, possessing the irresistible force of the screw; and, by the sudden and violent action of this power, he forcibly straightened in a few seconds a limb, that might have been firmly ankylosed for years, without regard to the laceration of tendons, blood-vessels, and nerves.*

Similar was the method of Dieffenbach. The patient was placed prone on the anterior part of his person on a table, with the offending knee projecting beyond the edge of the table. The resisting tendons were then divided by subcutaneous section, after which the operator bent the knee so forcibly, and to so great extent, as to bring the heel in contact with the nates. He next moved the limb in the opposite direction, and extended it more and more forcibly, occasionally subjecting it to flexion; and this alternate motion he continued until it was made straight. Dieffenbach states, in his work on the Division of the Muscles and Sinews, that he has often found the united force of three or four men necessary,—particularly in the case of adults,—to perform what he has not unjustly denominated *breaking a knee straight.*

It would be difficult to persuade any one who had studied anatomy with moderate attention that such proceedings could be accomplished without more or less injury, if not in all, at least in many cases. It has always and repeatedly been said that persons who practise irregularly,—we avoid the offensive though just appellation,—take with the human body and its members liberties which no regular practitioner could venture to do; and which, *a priori*,—that is, from knowledge of structure,—must be believed adequate to inflict irreparable injury. Very often even fortune seems to favour these people; or it must be allowed that the human frame possesses within itself powers of rectifying damage and counteracting the effects of violence which might reasonably be supposed to be most pernicious. Not always, however, do they escape in these rude and violent transactions. It is well known that, in not a few of the cases, rupture of the popliteal artery, laceration of the sciatic nerve, and other textures, with the usual consequences of such injuries, occurred on the application of the sudden forcible extension and movement by Dieffenbach and Louvrier.

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* For details, see Dictionnaire des Dictionnaires de Medecine, Vol. i. 8vo. Paris, 1840, and South's Chelius, Vol. i., p. 248.

Dr Little is of opinion that not only were these methods unjustifiably violent, but they were injudicious, and not suited to the object, by attempting to do too much at once and in a short time, and neglecting the subsequent management. It is manifest that after treatment is in this case, as in all others almost, the most important; and little doubt can be entertained that, as it is impossible with safety to hurry nature, so attempting to accomplish in the course of a few minutes or one day what must take up weeks and months, will only remove to a greater and more unapproachable distance the chance of final cure. Dr Little accordingly attaches great importance to the proper subsequent management of an ankylosed joint.

The treatment by the combined surgical and mechanical method may be divided, according to Dr Little, into three stages; first, the surgical operation; second, the mechanical reduction of the Ankylosis; and, thirdly, the period employed in restoring freedom of movement by means of passive and active exercises, frictions, manipulations, baths, and similar means. The first and second stages usually occupy little time. The last, which is commonly of longest duration, becomes often very tedious.

All depends apparently upon patience and perseverance. Under the most favourable circumstances restoration is difficult; Dr Little seems to think, rarely impossible. The length of time during which an articulation may have remained in part or wholly immovable, and yet capable of recovery, he states, may in some instances appear incredible. Restoration after ten or fifteen years' deprivation of the services of a joint, he states, is not uncommon. He mentions that he has undertaken the cure of Ankylosis of the knee-joint which had existed twenty-six years. It is not mentioned whether restoration was effected.

Our limits permit us not to enter into all the details of treatment pursued by Dr Little in order to restore to ankylosed joints their proper functions. But one or two may be selected, as examples of the general principles of the method.

"*Treatment of Ankylosis of Hip.*—If, in chronic or acute inflammation of the hip, the curative efforts of the practitioner have been so successful that, after a few weeks or months' duration of the disease, resolution has been effected, and slight muscular contraction, with thickening of the articular tissues, alone remain, attention to manipulation, friction and extension of the limb, with cautious exercise, will restore the functions of the member. If the muscular contraction and other resistance cannot be overcome by these means, an apparatus, consisting of a circular bandage fastened to the pelvis, and sometimes to the shoulders, with a steel spring attached behind to the femur, in order to effect extension of the member, may be worn, and will, in a short time sufficiently remove the contraction to permit the application of the entire sole to the ground. Should the use of apparatus and friction prove insufficient, the division of the contracted muscles offers the only chance of restoration; but this should not be resorted to until the practitioner is satisfied that no risk of reproducing the disease of the hip exists. Thus, within the first, second, or third year of the cessation of the hip-joint disease, the attempt at restoration by the aid of mechanical apparatus will usually be preferable; and if, in this manner, the member cannot be completely straightened, the aggravation of its position will be prevented. Even in cases of false Ankylosis, when osseous union appears imminent, judicious recourse to mechanical means will place the femur in such a position that the deformity will be much diminished, and the member prove much more serviceable than when, from ignorance of the value of attention to this circumstance, the limb is permitted to remain in the completely flexed position in which Ankylosis usually exists. The section of tendons is of great value in false Ankylosis of hip, even when many years have elapsed since the original disease; thus, I have successfully treated adults who had suffered from *morbus coxarius* in earliest infancy."—Pp. 37, 38.

On the subject of Complete Straight Ankylosis of the knee, a rare and unmanageable form of the lesion, Dr Little thinks the case must be regarded as incurable.

The following observations on the causes of stiffening, and the extent to which the surgeon may control and counteract their operation, deserve attention.

"Cases, however, occur, in which, after inflammation, and the formation of membranous adhesions between the articular surfaces, and incipient osseous deposits in those adhesions, the attention of the practitioner may be usefully directed to the attainment of a more favourable position of the member, and to the retention of a more limited amount of mobility. It should be borne in mind, that a slightly-flexed position of the knee is preferable to an absolutely straight one, and that even mobility to the extent of a few degrees will greatly ameliorate the patient's condition. It does not, at first view, appear probable that any interference on the part of the medical attendant can arrest the deposit of calcareous spiculæ into the abnormal tissues of an articulation, and the production of a complete Ankylosis. On the contrary, it is generally supposed that, whenever the organic crystallisation of the material circulating through the newly-organised adventitious tissues has commenced, no means which we possess can cause its cessation. It is, however, well known that, in a variety of instances in inorganic matter, crystallisation is prevented by the continued motion of the molecules, in the same manner as coagulation of the human blood within the living frame is partly prevented by the continued motion to which it is subjected within the blood-vessels. Whether the opinion that these facts are applicable to the question under consideration be hypothetical or not, we should imagine that passive movements of the articulation would merely retard the process. I am able, notwithstanding, with some confidence to affirm, that this process of ossification or calcareous deposit may safely, permanently, and advantageously be interrupted, by frequently repeated gentle movements of the articulation. This statement is liable to the objection that, in the experiments made on the subject, it may be doubted whether conclusive evidence of the incipient calcareous deposit existed. Surgeons entertain well-founded objections to movement of a recently inflamed articulation as a means of preventing ankylosis, the danger of reproduction of disease being, in incautious hands, great; but too limited a view of the nature of the previous disease, exaggerated fears of the danger of relapse, often indispose the practitioner to attempt restorative measures. It should be remembered that most local inflammatory affections require for their production and maintenance a morbid condition of the general frame, and that, during the continuance of the local disease, a beneficial change in the general health often ensues; so that those means which, at one stage of the affection, would have been ruinous to the articulation, may, at another, be safely applied. The condition of the general health should constitute an important guide in the determination of the propriety of endeavouring to restore the flexibility of a partially ankylosed limb. After severe traumatic injury, or rheumatic inflammation of a joint which has not terminated by resolution, but by one or other of the 'terminations of inflammation,' the system having been depleted, or the morbid predisposition removed, by proper regimen, or by antiphlogistic and other remedial agents, we may usually, within a few months, undertake the treatment of the resulting ankylosis; but after strumous disease of an articulation, it is prudent to wait a longer period, or until a favourable change in the diathesis of the individual has taken place, before active orthopædic treatment is undertaken. Sometimes, in such cases, we may be compelled to wait even several years before attempting to restore the usefulness of the member." —Pp. 41–43.

Some of the remarks in the foregoing passage deserve attention, as suggesting the explanation of the occasional cure of certain forms and degrees of Ankylosis. Dr Little admits the importance of improving the general health, and removing that state of the system upon which the presence of several local diseases depends. It is then that he allows that the peculiar treatment for restoring the movements of the joint is likely to be beneficial When it is remembered that in a proportion of the cases not inconsiderable, the impediment to movement depends on the remains and effects of chronic inflammation, the inference is too obvious to require to be formally stated.

The author considers in succession the treatment of Ankylosis in the ankle-joint, the joints of the toes, the elbow-joint, the wrist-joint, and the finger-joints.

It is unnecessary to enter into the details of the mechanical contrivances, which vary more or less in almost every joint. For the proper knowledge of these, readers should study the work; and in some instances, they will find it requisite to modify even the apparatus proposed by Dr Little.

An appendix is given, containing thirty-one cases, in which the author had successfully treated patients labouring under different forms and degrees of Ankylosis. These, of course, form but a small proportion of the cases treated by Dr Little, who has been engaged in this practice for several years.

It is scarcely necessary to say that we avoid giving any opinion on the merits or suitableness of this mode of treating stiff-joints. We have always said that we consider ourselves as the historians of methods of treatment, not the judges. That duty must be performed by another tribunal. Our duty is limited to the province of placing before the profession the methods proposed, while to others may be left the task of ascertaining their actual merits. One observation only may be subjoined. It is manifest that Dr Little owes much of the success with which his method seems to be attended, to the perseverance and diligence with which he has applied it, and the lengthened and gradual manner in which the means for removing stiffness of the joint and restoring its movements, were applied and carried into effect.

The short Essay, by Mr Thomas Buchanan, is entitled to attention, chiefly because in it was given one of the earliest accounts of the treatment of diseased joints by the application of the tincture of iodine. This remedy has now become exceedingly common, and is in almost daily use in various affections of the joints. Mr Buchanan applies the tincture by means of a camel hair pencil over the surface of the affected joint.

The same agent he recommends to be employed in cases of non-union of fracture, and, according to his representation, with success. The principle upon which the application acts, is, according to Mr Buchanan, to excite the capillary vessels to proper action, and by that means to cause them to effuse lymph, which is converted, or is to be converted, into bone.

Art. II.—*General Index to the first thirty-three volumes of the Medico-Chirurgical Transactions.* Published by the Royal Medico-Chirurgical Society of London. London, 1851. 8vo., pp. 236.

When physicians and surgeons first began in Great Britain to record the results of their experience, and those examples of disease and instances of cure or recovery which, from their importance or singularity, were regarded as deserving of preservation, the channel employed was the Proceedings of the Learned, as they were in those days named, or the Transactions of the Royal Society. This body, which originated in the self-proposed meetings of a few learned and scientific persons, in 1645, was then named Gresham College, from the circumstance that the meetings of its members were held within the walls of that ancient establishment.

Gresham House, or Gresham College, originally built of brick and timber, stood to the east side of Winchester Street, with the front looking into Bishopsgate Street. In this house resided the seven Professors, appointed under the will of Sir Thomas Gresham; and in its apartments were delivered the lectures on divinity, astronomy, music, and geometry, on civil law, physic, and rhetoric, founded by Sir Thomas Gresham, from the year 1597 till the time of the civil wars in the seventeenth century, when they were interrupted and suspended by the disorders of the day.

About the year 1645, several learned persons residing in London, and interested in the progress of mathematical science and natural philosophy, particularly as investigated by experiment, proposed to hold weekly meetings, in order to communicate and receive the observations of each other. Among these were Dr John Wilkins, afterwards Bishop of Chester, Dr Wallis, Dr Jonathan Goddard, Dr George Ent, Dr Francis Glisson, and Dr Christopher Merret, doctors in medicine; Mr Samuel Foster, professor of astronomy in Gresham College; and Mr Theodore Haak, a native of the Palatinate in Germany, to whom is assigned the merit of suggesting the meetings. These gentlemen met sometimes at Dr Goddard's lodgings in Wood Street, in consequence of his keeping in his house an artist for grinding glasses for telescopes; sometimes at a convenient place in Cheapside; and sometimes in Gresham College or its neighbourhood. This assembly is mentioned by Mr Boyle as the Philosophical College, in some letters of that writer, dated 1646 and 1647.

On the 13th of April 1648, Dr Wilkins was appointed Warden of Wadham College; and in June 1649, Dr Wallis was appointed Savilian Professor of Geometry; circumstances which prevented these two members from attending the meetings regularly; while the appointment of Dr Goddard to be Warden of Merton College, on the 9th December 1651, had a similar effect upon his attendance. These members, nevertheless, in conjunction with Dr Seth Ward, then Savilian Professor of Astronomy, and afterwards successively Bishop of Exeter and Salisbury, Dr Ralph Bathurst, Dr William Petty, Dr Thomas Willis, and others, continued to hold meetings at Oxford, first at the chambers of Dr Petty, and occasionally at the house of an apothecary, until the year 1652, when Dr, afterwards Sir William, Petty removed to Ireland. After this they met at the apartments of Dr Wilkins till September 1659, when that gentleman became Master of Trinity College, Cambridge. The society then met for a short time in the apartments of the Honourable Robert Boyle.

In the year 1659, when most of the Oxford members had come to London, they usually met at Gresham College, on Wednesday and Thursday; and they were then joined by William Lord Brouncker, William Brereton, Sir Paul Neile, John Evelyn, Thomas Henshaw, Henry Slingsby, Dr Timothy Clarke, Dr Ent, William Balle, Abraham Hill, Dr William Croune, and other gentlemen of similar pursuits and tastes. To these meetings, however, an abrupt interruption was given by the unsettled state of affairs in 1659, ensuing on the resignation of Richard Cromwell; and it was only in 1660, after the restoration, that the meetings were resumed. They were then held at the apartments of Mr Rooke, at Gresham College, and during the vacation, at Mr Balle's chambers, in the Temple.

The society was now regularly organised, by the appointment of a president and secretary; and though first limited by rule to 55 members, this was very soon altered; and the society was laid open to every proper candidate. On the 15th July 1662, a royal charter was granted by Charles II., constituting the society a body corporate, under the name of the Royal Society; and confirming the appointment of Lord Brouncker as first president; Dr Wilkins and Mr Oldenburgh first secretaries; William Balle, treasurer, and twenty-one of the members as council.

The Society continued to hold their meetings at Gresham College till the beginning of the year 1667, when Henry Howard, afterwards Duke of Norfolk, presented to them the Arundel Library, and at the same time provided them with convenient apartments for meeting in Arundel House; Gresham College having been rendered unfit by the great fire of 1666.

In 1673 the Society were again invited by the professors to hold their meetings in Gresham College. Here they continued to meet till the year 1711, when they removed to a house which they had purchased in Crane Court, Fleet Street. The numbers of the society had now become very great, and included all scientific persons of any respectability. They possessed a good museum, and a library of considerable extent and value.

The memoirs, narratives, and records communicated to the Society appear not in all instances to have been brought before them in the shape of formal written papers. Often they appear to have been oral communications; and some appear to have been continued and repeated as the subjects required, from one meeting to another. It was evidently long before it was thought that they possessed sufficient interest, importance, and novelty, to justify publication: and when publication was first attempted, which was in 1665, it was the act of the secretary or secretaries, not that of the Society at large. They were published in the form of FASCICULI or numbers, from time to time, as the materials increased in number, size, and importance. Between 1665 and 1677, a space of twelve years, 136 numbers, making nearly the whole of the first twelve volumes, were published. This is at the rate of eleven numbers in the course of each year, so that there were not so many as one number each month.

Between 1677 and 1679 only five numbers were published; and after this period an intermission in publication for three years took place. After this time the publication went on rather in an irregular and desultory manner, till the year 1728, when the publication was continued until 496 numbers or 46 volumes were issued, which was in the year 1750.

The forty-sixth was the last volume that was published in numbers; and it was the last volume that was published by the secretaries. After this, namely, commencing in the year 1751, the Society having in 1750 appointed a committee in order to superintend the publication of the Transactions, that duty was assumed by the Society, though without incurring any responsibility as to the accuracy of the facts recorded, or soundness of the opinions and doctrines promulgated; and ever since it has been conducted in the same manner and upon the same principles. During the first twelve years, from 1751 to 1761 inclusive, in both ways, only one half volume was published annually; but since the year 1762, two half volumes, or one entire volume, have annually made their appearance.

When the Royal Society first originated, in the middle of the seventeenth century, a large proportion of its members were physicians, some of whom have been already named. Whether this was the reason or not, a considerable number of the communications were from physicians and surgeons, and were on the subjects of Anatomy, Physiology, Practical Medicine, and Surgery. This body indeed was the only one at that time before which members of the medical profession could communicate the results of their experience and researches; and its pages were the only channel by which these results could be preserved from oblivion.

In this manner the observations and writings of such men as James Yonge of Plymouth, Edward Tyson, William Cowper, Thomas Molyneux, Nehemiah Grew, William Cole, Lower, Musgrave, Clopton Havers, Cheselden, and others too numerous to recount, found their way to the eyes of the reading public, and were put on record for the advantage of posterity. During the concluding years of the seventeenth century, and the first third of the eighteenth century, this continued to be the general receptacle of all those important facts and observations which the daily and yearly experience of physicians and surgeons brought under notice. At or about this time (that is, about the year 1733, and between that time and the middle of the century), however, a change began to take place, and members of the medical profession thought of the plan of publishing, in works devoted to that purpose solely, the results of their observation.

It is not a little creditable to Scotland that the earliest indications of this disposition took place in Edinburgh; and the success with which the proposition was attended was very much owing to the energy and influence of one man, the first Dr Monro. The MEDICAL ESSAYS AND OBSERVATIONS, revised and published by a Society in Edinburgh, was the first publication expressly and exclusively devoted to the preservation of such isolated but important facts as individually could not be published with advantage, but conjointly formed a work of great value to the practical physician and surgeon. The society which published these Essays first commenced their meetings in 1731 and 1732; and in 1733 the first volume of their Transactions appeared, at Edinburgh, from the press of Ruddiman. As the reasons for this separate publication are stated with great clearness and force, and show why it was desirable to have a record of facts different from that of the Transactions of the Royal Society, it may not be improper to place them before the reader in the terms then employed.

"The last method of communicating observations to the Public has been in Collections made by Societies; the most conspicuous of which are the ROYAL SOCIETY in London, the ACADEMIE ROYALE DES SCIENCES at Paris, the *Academia Scientiarum Imperialis* at St Petersburgh, and the *Academia Naturæ Curiosorum* in Germany; all instituted by Public Authority for the advancement of Natural Knowledge, under which the several Branches of Medicine are comprehended."

"The PHILOSOPHICAL TRANSACTIONS and MEMOIRES DE MATHEMATIQUE ET DE PHYSIQUE are valuable Treasures that public libraries cannot be without, and all learned men wish to possess, in the numerous volumes of which many parts of Medicine have been treated with the utmost accuracy and ingenuity; but the constitution of the English Society and French Academy does not allow them to insert several things, which a plan calculated only for the Improvement of Physik would easily admit; and it is to be regretted that their Papers are not so universally purchased as they ought, by those who are employed in Medicine, because the greater share of the Tracts are not immediately relative to their proper business, but treat of Natural History, Mechanics, Astronomy, Abstract Mathematics, &c."

The Society next observe, that, of the two volumes of the Petersburgh Transactions then published, the plan was so entirely like that of the Royal Society and Academy of Sciences, that it was unnecessary to adduce more reasons to show, that it was equally unsuited to promote the progress of Medicine as an independent branch of knowledge.

The Collections of the *Academia Naturæ Curiosorum* the Society allow to be more calculated for the immediate improvement of Medicine than either of the other three publications. But they observe, that, besides containing many papers on Natural History and Philosophy, and being liable to the inconveniences of other foreign observations, they omit several necessary articles, which, in the opinion of the Society, ought to be inserted.

It is not easy to say, whether this was really sincerely believed, or whether it was only a modest and respectful manner of stating the least offensive part only of the objections to the German Collection. It had long been observed, that in that Collection were admitted all foolish and idle stories indiscriminately, if they were merely only wonderful, and that the editors (whoever they were) were much more remarkable for their credulity than for their judgment. The members of the Society might have been conscious of the defects of this Collection, but did not see the necessity of expressing that consciousness. It was twenty-five or thirty years after that time, when William Cullen, with characteristic penetration and decision, pronounced these Transactions to be "a Collection of old women's tales, countenanced by the publication of them by a learned Society within these forty years."*
The time for this plain and unequivocal mode of expression had not yet arrived; and the members of the Edinburgh Society were naturally and justly unwilling to peril the success of their own undertaking by offensive criticism of the labours of contemporary associations.

It was manifestly a part of the same feeling that led them to place the new work under the patronage of Sir Hans Sloane, at that time president of the Royal Society. Then was the era of dedications. The most ordinary performance could not appear before the public, unless inscribed to the name of some person distinguished for rank, for science, or for literature; and it was a becoming act in the new association at Edinburgh, to inscribe the results of their labours to one, who confessedly occupied an elevated position in natural science, and was at the same time at the head of the great National Society.

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* A Treatise on the Materia Medica. By William Cullen, M.D., &c. Vol. i. p. 143. Edinburgh, 1789. The first edition, in the form of Lectures, delivered in 1761, was published, without the author's permission, in 1773.

The Edinburgh association continued their labours for twelve years, and published, between 1733 and 1744, five volumes, the fifth being in two parts, and as large as any two of the previous ones. These volumes contained several valuable records of disease and the effects of remedies, the knowledge of which would probably have been lost to the profession, but for the means of preservation thus afforded. They have always been held in high esteem, both for their intrinsic merits, and also as forming the first of a series of periodical publications, to which it is generally allowed the profession is deeply indebted. The termination of this series in the year 1744,—in other words, the appearance of no volume in 1745,—has been usually ascribed to the disorders into which Edinburgh and all its institutions were thrown during that year. The courts of law were suspended and closed; meetings of public bodies ceased; and all business of every kind was suspended and interrupted, in the solicitude to defend the city against the attacks of the rebel force. Certain it was, that Colin Maclaurin, one of the secretaries, had been so much occupied in superintending the fortifications of the city, during that year, and had been subjected to so much labour and fatigue, that he was soon after attacked by the disease which terminated his life. The loss which the Society thus sustained was regarded as irreparable.*

Meanwhile, though the Society had been originally instituted for the cultivation of medical science and the reception of medical and surgical papers, it was speedily perceived that it might be desirable to enlarge its plan, and to carry their endeavours into other divisions of science. Accordingly it appears that, in 1737, the Society was organised upon a new and more extensive foundation, having not only a president and treasurer, but two secretaries, one having the charge of the communications and papers relating to Geometry, Astronomy, Mechanics, Optics, and Physical Geography; and the other, those relating to Anatomy, Medicine, Chemistry, Botany, Mineralogy, and Natural History. The association thus formed was denominated the Society for Improving Arts and Sciences, and particularly Natural Knowledge, established at Edinburgh; and their regulations, with a list of the members, amounting to forty-seven, was published at Edinburgh in 1739.† They consisted chiefly of the professors in the University, several of the judges, some advocates, several physicians and surgeons, and a few others. Among the judges were Duncan Forbes, Lord President, and Sir Gilbert Elliot of Minto. Among the professors were Alston, Monro the first, Plummer, John, afterwards Sir John, Pringle, and Andrew St Clair. The only clergyman appears to have been Dr Robert Wallace, whose Essay on the Numbers of Mankind afterwards attracted much notice. The Earl of Morton was president, and Colin Maclaurin secretary. At a subsequent period David Hume was one of the secretaries.

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* Essays, Physical and Literary, Vol. I.

† Proposals for the Regulation of a Society for Improving Arts and Sciences, and particularly Natural Knowledge. Edinburgh, 1739. 4to, pp. 14.

It is a curious but melancholy fact, which the Society themselves mention, that soon after it had received this new and more comprehensive form, several misfortunes happened which retarded its progress, and prevented it as an association from communicating to the public anything whatever for several years. One of these was the unsettled state of public affairs, and the confusion in the minds of many consequent upon the rebellion of 1745. Another was the death of the secretary, Mr Maclaurin, as already mentioned. In short, ten years elapsed before such a degree of tranquillity was established, that any attempt to publish papers was made; and at length, in the year 1754, the first results of their meetings and labours appeared in the publication of the Essays and Observations, Physical and Literary, read before a Society in Edinburgh. In 1756 a second volume followed; and in 1771 a third appeared, and proved to be the last.

In this third and last volume the Society is styled the PHILOSOPHICAL SOCIETY IN EDINBURGH; and in point of fact the Society had acquired a more general and miscellaneous character, and was the precursor of the Royal Society of Edinburgh, into which it was ultimately converted.

The papers in these three volumes are of great importance and value. They are not by any means confined to medical and physiological subjects, but are on physics, mathematics, pure and mixed, optics, mechanics, botany, chemistry, and agriculture. The anatomical, physiological, and medical articles, nevertheless, form a considerable proportion of the contents.

The essays, Physical and Literary, formed the last of the series in Edinburgh. After the publication of the third volume, the Philosophical Society of Edinburgh, although its meetings were not discontinued, fell for some time into a state of languor and inactivity, till about the year 1777, when its meetings became more frequent; and, under the zealous management of Henry Home, Lord Kaimes, at that time elected president, the business was conducted with renewed ardour and diligence. At length, seventeen years after the appearance of the last volume of the essays, the Society, which had received, on the 29th of March 1783, a charter of incorporation converting it into the Royal Society of Edinburgh, published, in 1788, the first volume of a new series of Transactions in 4to; and though, after that period, anatomical, physiological, and medical papers appeared in the Transactions, yet, as the great object of the Society was the cultivation of general physical science and the publication of memoirs on its departments, it does not belong to the nature of this notice to continue this narrative to a later period.

The example of the original Edinburgh Association had been most serviceable to the cause of medicine and surgery, and its influence was at once felt and acknowledged, though that association had ceased to exist as a body separate from the Philosophical Society. The effect of this example was first shown in the metropolis.

About or previous to the year 1750, a number of physicians, either connected with some one of the hospitals or otherwise in some degree of repute in their profession, began to hold meetings for the communication of such facts as appeared to them to deserve mention, and for mutual benefit in the practice of the art of healing. Among the subjects considered, were not only remarkable examples of disease and the effects of remedies, but the reigning diseases of the season, with the methods of cure found to be most effectual, new discoveries in medicine either at home or abroad, and especially the consideration of those therapeutic methods and remedies which the members had themselves subjected to trial.

When these meetings had continued for some time,—we understand, between two and three years,—some of the members became desirous to make public those facts and deductions which seemed most to deserve attention. With some other physicians, they accordingly formed themselves into an association, for the purpose of collecting and publishing MEDICAL OBSERVATIONS AND INQUIRIES. Of the facts thus collected, between 1753 and 1757, the first volume appeared at London in 1757.

The editors expressly allow in their preface that their precedent, and in some degree their model and example, was given by the Edinburgh Society. As, however, the field, namely, the metropolis, was greatly more extensive, and the labourers both more numerous and possessed of better opportunities, so the results were, on the whole, more valuable. This association published, in the space of twenty-seven years, between 1757 and 1784, six volumes, containing a very large amount of most important facts in medical and surgical pathology and therapeutics; and so highly was the collection esteemed, that in the course of a few years the earlier volumes passed through four editions; and others, especially the sixth, which was published in 1784, was reprinted at a period so recent as 1812. Among the members of this association, William Hunter, Dr Clephane, Dr Samuel Pye, Dr Sylvester, and Dr George Cleghorn, held conspicuous places.

The MEDICAL OBSERVATIONS AND INQUIRIES were the fruit of the labours of many members of the profession, both medical and surgical, who, unconnected with the College of Physicians except as licentiates, exerted themselves to promote the progress and improve the knowledge of Medicine and Surgery.

Some years after these volumes had been before the public, the Fellows of the College of Physicians also bethought themselves of entering on a similar career; and in 1767 they published the first volume of MEDICAL TRANSACTIONS BY THE COLLEGE OF PHYSICIANS. This publication was continued in other two volumes, until the year 1785, when a long cessation in the labours of the Royal College took place. At length, in 1806, the members began to awaken from a state of lethargy of more than twenty years' duration, and papers were communicated and read at the college for some years. These communications enabled the college to publish a fourth volume of Transactions in 1813, a fifth volume in 1815, and a sixth in 1820. After this date, no more efforts at publication took place; and the six volumes of the Transactions of the college,—extending over a space of fifty-three years, from the comparatively remote period of 1767 to that of 1820,—are the only memorial of the collegiate labours of this exalted incorporation.

The principal contributors in the first three volumes are the two Heberdens, William and Thomas; Sir George Baker, Dr Mark Akenside, Dr Warren, Dr Donald Monro, Dr Reynolds, Dr John Hunter, and Dr Darwin.

In the second series,—consisting of the fourth, fifth, and sixth volumes,—the scene is altogether changed. Among the contributors are the names of Matthew Baillie, William Saunders, John Latham, the younger W. Heberden, Powell, Maton, Pelham Warren, and Sir H. Halford.

These volumes contain many instructive papers, which must always be perused with interest. Those by Dr Baillie, which are numerous, are most valuable. But the communications, taken collectively, can scarcely be compared with those of the Medical Observations and Inquiries; and it may be safely asserted that they have not been studied so extensively by professional readers as those of the Association of Physicians. Part of this was probably to be ascribed to the circumstance, that the volumes did not come out so regularly and so frequently as those of the association. At one time there was a state of apparent death and suspended animation, lasting for the space of twenty-eight years, during which the college as a body gave no signs of life; and all along the materials for publication appear to have been less abundant and more difficult to be obtained than they were by the Associated Physicians. In short, the experiment seemed to show that the college as a body was unable to maintain a continued series of papers, which might edify and interest the profession at large.

In the meanwhile, after the cessation of the Transactions called the Medical Observations and Inquiries, which took place in 1781, not fewer than three new Associations arose, with the intention of collecting and recording the results of professional observation. The first of these styled itself the SOCIETY FOR PROMOTING MEDICAL KNOWLEDGE, and published, in the six years between 1784 and 1790, two volumes of Medical Communications, several of which were of great value, and highly original. Dr, afterwards Sir James, Carmichael Smyth was one of the principal organs of this association, the volumes of which contain, among other valuable articles, the first sketches, by Dr William Stark, of his Description of the Morbid Anatomy of the Lungs in Consumption. This essay attracted much notice at the time at which it appeared.

The second association which undertook the duty of collecting and recording the stray waifs of medical and surgical experience was the Medical Society of London, or what used to be called, from the place of meeting, the Medical Society of Bolt Court.

The Medical Society of London, which was instituted in the year 1773, was intended to be perfectly catholic in its constitution. It consisted of physicians, surgeons, and apothecaries; who were divided into three classes,—Fellows, Corresponding Members, and Candidates. The number of Fellows was restricted to thirty in each branch of the profession; that is to say, ninety altogether. So long as each of these three classes was complete in its prescribed number of thirty, no one could be admitted as a Fellow; but an important saving regulation, which counteracted the apparent exclusiveness of this one, was, that any person desiring to join the Society might, if properly qualified, be admitted into the order of Candidates, who enjoyed all the privileges of Fellows, except that of voting on any question which might come before the Society. When any vacancy happened in the list of Fellows, it was filled, by ballot, from the Candidates of that distinct branch of the Society, in which the vacancy had taken place.

This society was originally set agoing by Dr John Fothergill, and warmly and substantially patronised by Dr Lettsom, who presented to them a spacious freehold house, in which, besides chambers for the meetings and other purposes of the society, there was a library, capable of containing forty thousand volumes.

The Medical Society of London published the first volume of its Memoirs in the year 1787, and proceeded with great diligence and regularity to publish other five volumes, between that period and the year 1805. At this time, in the preface of the sixth volume, the Editors expressed themselves with great confidence of the increasing prosperity of the Society; they announced, as usual, the subjects of their prize essays for every year, from 1806 to 1810 inclusive; they reminded their professional brethren, that the library now contained upwards of ten thousand volumes, many of singular rarity and value, and always accessible to the members; and they appear to have looked forward to a long period of useful and honourable exertion, in promoting the advancement of the medical sciences. It is impossible to doubt that this society had been, and continued to be, of signal service to the profession. It brought together many active members of the profession, who might have few other opportunites of meeting each other, and contributing their respective communications; while it was the medium of preserving many important records of disease and methods of treatment, which might otherwise have been lost or not so readily made known. At this very time, however, there were in operation, circumstances which tended to absorb into one great channel all other establishments of the kind. The sixth volume of the Memoirs was the last which the Medical Society of London was destined for several years to publish. After the appearance of the sixth volume, in 1805, five years elapsed before any subsequent attempt at publication was made; in 1810 the first part of the seventh volume appeared, under the name of TRANSACTIONS of the Medical Society; and, seven years afterwards, the second or concluding part of the seventh volume appeared, in 1817.

After this date, the publishing energies of the Society appear, like those of the College of Physicians, to have been overtaken with a long period of torpor and lethargy. Twenty-eight years elapsed before another effort at publication took place. At length, in 1846, the first volume of a new series appeared, to one essay in which, that by Mr Thomas Bell on the use of the Microscope, we had occasion to direct the attention of our readers in the seventy-third volume of this Journal.*

Looking deliberately and impartially on the labours of this respectable Society, every one must admit that they are justly entitled to the gratitude of the reading portion of the profession. The Memoirs, nevertheless, which they published, will not in any sense bear comparison either with the MEDICAL COMMUNICATIONS of the SOCIETY for PROMOTING MEDICAL KNOWLEDGE, or with those of the third body which we have to notice, The Transactions of the SOCIETY for IMPROVING MEDICAL and CHIRURGICAL KNOWLEDGE. The members of the Medical Society were evidently zealous and diligent in their own way, and collected, as already stated, many useful papers and records. But they were, it must be allowed, deficient in that form and kind of intellectual energy, which gives value to the communications of a scientific association. During the most palmy period of their existence, the principal hospital physicians and surgeons sent their papers either to the Society for Promoting Medical Knowledge, or to that for Improving Medical Knowledge, or to the Royal Society; and hence few papers by the most eminent medical writers of the day appear in their pages. Many of the communications were from the physicians and surgeons of the provincial towns, most estimable and meritorious individuals, but probably not possessing the extensive and valuable opportunities for professional observation which unquestionably exist in the metropolis, and perhaps often without the leisure and time requisite to arrange and digest the results in methodical order. But whatever were the cause, these volumes, valuable as they are, have not acquired the high character either of the two volumes of Medical Communications, or the three of Medical and Chirurgical Transactions.

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* Edinburgh Medical and Surgical Journal, January 1850.

The Medical Society of London continues to hold regular meetings, and is of eminent service, by promoting among the members friendly feelings, a spirit of emulation, mutual improvement, and advancement in medical knowledge. Its council appoints the subject of the Fothergillian Prize Essays, and awards the Medals.

The third association to which reference has been made, as continuing the function of collecting, recording, and publishing the results of Medical and Surgical Observation, consisted of a number of physicians and surgeons, mostly connected with hospitals, all men of superior attainments, of great industry, and enjoying good opportunities of professional improvement, who united themselves for the purposes specified about the close of the year 1783 and the beginning of 1784. Among the members of this association were Dr John Hunter, distinguished by his work on the Diseases of Jamaica, George Fordyce, Matthew Baillie, William Charles Wells, Sir Gilbert Blane, John Hunter the surgeon, Everard Home, John Abernethy, Dr John Clarke and Charles Mansfield Clarke, and Benjamin C. Brodie.

They began their labours by reading communications in 1783 and 1784; and, in 1793, they published the first volume of their Transactions. This collection very speedily attracted much attention, and acquired a high character, which it has ever since retained. A second volume of articles not less valuable was published in 1800, and a third in 1812. These were the only volumes published; for, from circumstances to be presently noticed, the essays and memoirs most likely to be presented to this association were likely to be transferred to another body which had been now in operation for several years.

The volumes now mentioned are highly esteemed by the profession; and the papers, proceeding as they did from the most experienced and diligent physicians of the metropolis, contain a large amount of new and accurate information. The papers by Dr Baillie, though short, bear impress of the correct mind of that able physician. In these volumes appeared the essays by

Dr Wells on Albuminous Urine, which must always be perused with interest; and the papers by Dr John Hunter on Typhus Fever and Hydrophobia show the diligence and correct habits of investigation for which that physician was distinguished.

It must have been observed, from the foregoing sketch, that all the associations hitherto mentioned, excepting the Medical Society of London, were hitherto without that regular organisation and character of public authority, which the Royal Society had for nearly a century and a half possessed. They were voluntary associations of members of the profession of the first respectability unquestionably, meeting for the most laudable and useful purposes, but known to the world and to the profession only by the volumes which they from time to time published. By their fruits were they known; and by these only. They had, properly speaking, no local habitation or name; no distinct and acknowledged status; and they pursued their labours in a manner so reserved and unobtrusive, that they made, except by the results of their labours, little or no figure in the public eye. Even the two most recent of these associations, though known to comprehend the most eminent and learned physicians and surgeons in the metropolis, were nevertheless concealed, as it were, and enveloped in this nondescript and negative character.

Meanwhile, in the year 1805, several physicians and surgeons, also connected with the metropolitan hospitals, thought that there was at once room and occasion for an association upon catholic and comprehensive principles, for the purpose of receiving, communicating, and publishing such memoirs as the experience of a large city like London would undoubtedly furnish. The principal movers in this scheme were Dr John Yelloly, then physician to the London Hospital, a man of singular activity of mind, of considerable learning, and a skilful and accurate practical chemist; Astley Cooper, surgeon to Guy's Hospital; Dr John Elliotson, and a few more. If it be asked, why these gentlemen desired to establish an association different from that already in existence, the answer is, that they did not wish to compete with that association, but to embrace its members; that they wished to organise an extensive association, which might comprehend all the medical and surgical talent of the metropolis; and that their great object was to concentrate the energies of all, and conduct upon systematic principles the advancement of medical and surgical science, which had hitherto been carried on in a manner too desultory and irregular.

One of the founders of this Society we have heard state, that the great purpose which they had in view, was to establish an independent institution, on principles which should avoid the exclusiveness of the College of Physicians, while it gave ready access to all respectable and active members of the profession, and studied to unite in the great general object of the improvement of medicine as a science and as an art, all ranks and degrees of professional persons, physicians, surgeons, accoucheurs, and general practitioners.

In this manner was founded, in 1805, the Medico-Chirurgical Society. The result was commensurate with the zeal, activity, and expectations of the founders. In no long time the Medico-Chirurgical Society numbered among its list all the eminent physicians and surgeons, whether distinguished for science or practice, in the metropolis, the professors in the two English universities, all physicians of any note in the provinces, and several of the medical professors in the Scottish universities. All this accession of force, however, would not have kept the Society from following the fate of several of its predecessors, had not the energy of the first founders never ceased to animate the body, and, by unceasing exertions, to concentrate their energies upon the great object for which the Society had been called into existence.

Several years elapsed before they began to publish, very much, we understand, because the articles, which subsequently formed the third and last volume of the Society for Improving Medical and Chirurgical Knowledge, were still in the course of preparation for publication. Indeed, in some respects the latter Society may be regarded as the precursor of the Medico-Chirurgical; for all the members who belonged to the one were associated with the other. At length, in May 1809, after the Society had been in existence for four years, the first volume of the Transactions of the Medico-Chirurgical Society appeared. Its dimensions were not great; but its contents were highly important; the names of the authors were already fixed in an elevated position in the public eye. The names of John Yelloly, Astley Cooper, John Abernethy, Christopher Stanger, Bostock, Marcet, Thomas Blizard, and Edward Jenner, all appear in this volume as contributors of important articles. Whoever knows or remembers what these men were, how great was their energy in the prosecution of science and the improvement of art, how powerful were their talents, how enlarged were their views, must look with mingled feelings of interest, admiration, and reverence on their efforts, at this early period, to establish the society on a solid and substantial foundation. The value of these communications, which has always been regarded as great, must be mainly attributed to the zeal and energy especially of Dr Yelloly and Astley Cooper, and the influence which they exerted upon various professional friends.

In December 1811, rather more than two years after the publication of the first volume, appeared the second volume of the Transactions of the Medico-Chirurgical Society; and, successively, the third in December 1812; the fourth in December 1813; the fifth in November 1814; and the sixth in December 1815.

By this time the character of the Society was firmly established. Its success was no longer a matter of doubt. Its Transactions were regarded as volumes containing matter so valuable in pathology and practice, that every one understood himself obliged to study them. The demand for the volumes published was so great, that the first and second volumes went in the course of a few years through three editions; and the third, fourth, fifth, sixth, seventh, and eighth through two editions. All respectable members of the profession were desirous to obtain admission to a body, which numbered among its fellows all the eminent physicians and surgeons of the day. One of the first steps which any one commencing as physician or surgeon in the metropolis took, was to apply for admission to the Medico-Chirurgical Society; and the example was eagerly followed by those settled in the provincial and county towns. Meanwhile, its communications daily increased in number and in value. By the high character which its Transactions had at first established, it speedily attracted all that was most valuable in the experience of physicians, surgeons, accoucheurs, and general practitioners. Nor was it alone from practitioners in civil life that contributions were presented. They proceeded from the physicians and surgeons in both divisions of the public service and from those in the colonies. In short, the Medico-Chirurgical Society of London had, in the course of fourteen or fifteen years, drawn to its board all that was useful and valuable in the medical profession of the British empire.

In this course the Society proceeded for the space of twenty-eight years, between 1805, the date of institution, down to 1833, when they published the eighteenth volume of their Transactions. Of the nature of this series of publications it is unnecessary in this place to speak. They require not our commendation, though we have taken all opportunities of directing the attention of the readers of this Journal, either to the whole papers as the volumes appeared, or to individual essays and articles which seemed, either from the importance or the novelty of the subjects treated, to deserve particular attention. It may be asserted, without exaggeration, that the contents of the volumes increased in value as they proceeded; and they had, at the time mentioned,—namely, in 1833,—formed the longest series of merely professional periodical publication, excepting the ordinary journals, which the world had yet witnessed.

With all this unremitting and serviceable exertion, nevertheless, the Society was still not more than a mere voluntary association. It was without charter, and all that weight and those privileges and immunities which the possession of a charter is supposed to confer. Its dignity and respectability depended entirely on the characters of its members. Efforts had been made more than once to obtain for the Society this mark of public and authoritative consideration. But all these efforts were opposed, it is said, we know not with what truth, by another incorporation, which endeavoured to show that any such authority would interfere with its privileges. For the reality of these allgations we cannot vouch. All that is known is, that for a long series of years the applications were successfully resisted. At length, however, some time after the accession of William the Fourth, those older members of the Society who were most desirous to see the body incorporated in this manner, learned that the prospect of obtaining a charter was more probable than it had in previous years been, and that the application was less likely to be opposed. A petition was accordingly presented to William the Fourth, on the 7th May 1834, by the three oldest members, Dr Elliotson, Dr Yelloly, and Sir Astley Cooper, with the unanimous sanction of the members of the Society, praying for a royal charter of incorporation, as an instrument that would materially contribute to the stability and efficiency of the Society; and such a charter was accordingly granted on the thirteenth of September 1834, by writ of Privy Seal.

Since the era of this event, in 1834, nearly seventeen years have elapsed; and most of the original members of the Society have, we believe, retired from this sublunary scene. In energy, zeal, and diligence, nevertheless, the members of the Society have not abated nor relaxed their efforts. They have published fifteen volumes of a second series of papers, in which the original character of the Society has been sustained with great ability. Several of the volumes of the new series have been examined, in various degrees of amplitude, in the pages of this Journal. In instances in which it was impracticable or superfluous to give an abstract of entire volumes, we have given full accounts or abstracts of articles which, from their novelty or important bearings on Pathology and Therapeutics, were entitled to that distinction. It is not meant by this to convey the idea, that the memoirs not noticed are less valuable or instructive than those which were. They might be too detailed to admit of abridgment, too lengthened to be examined with justice to their contents; it might be unnecessary to do more than merely refer to them. We may here repeat, what we are sure is the general voice and opinion of the profession, that the thirty-three volumes to which the Transactions of the Medico-Chirurgical Society have grown, form a series of contributions on Medical and Surgical Pathology and Therapeutics unrivalled in the medical literature of any European country, whether the importance of the subjects or the value of the information conveyed, is considered. They may be regarded as containing all the important information which the uninterrupted labour of forty-five years by the best informed members of the profession has produced.

We began with the Transactions of the Royal Society, and this sketch would be imperfect if we did not, before concluding, revert to this subject.

Though the institution of separate societies for the reception and publication of essays and observations by physicians and surgeons naturally drew into a new channel, many performances which would have been communicated to the Royal Society, yet this circumstance did not divert from the great national institution all papers on professional subjects. The Royal Society was still regarded as a proper tribunal for the reception of papers on Anatomy, Comparative Anatomy, Physiology, and certain subjects in Surgery. William and John Hunter, William Hewson, John Abernethy, and others, communicated a considerable number of papers during the latter half of the eighteenth century. In more recent times Sir Everard Home made these Transactions the vehicle for papers, most, if not all, of which, are now known to have been written by John Hunter. The anatomical and physiological memoirs of Sir Charles Bell, Sir Benjamin C. Brodie, Dr Marshall Hall, Dr Robert Lee, Dr Martin Barry, Mr Wharton Jones, the physiological and chemical memoirs of Dr Prout, and many others, have been preserved in the volumes of the Royal Society. In short, these volumes still form the channel for publishing many valuable contributions on Anatomy, Physiology, and Animal Chemistry, the interest of which is believed to give them a closer alliance with general science than mere subjects in practical Medicine and Surgery.

Some idea may be formed of the large proportion of papers on medical subjects in the Philosophical Transactions from the following statement. In 1800, it was found that the number of separate papers in the volumes of the Society amounted to 4166. Of these, there were 131 upon subjects in Anatomy; 90 upon subjects in Comparative Anatomy; 220 upon subjects in Physiology; and 478 upon subjects in Medicine and Surgery; rather more than one-ninth of the whole number.

Again, the papers on Astronomy amount to 416, or one-tenth of the whole number; and the papers on Chemistry to 406, or less than one-tenth of the number. These, however, are the most numerous, next to those on Medicine and Surgery, which thus form the largest proportion of the papers in the Transactions; while, if the whole of the memoirs on subjects in Anatomy, Comparative Anatomy, Physiology, Medicine, and Surgery, be taken together, they amount to the large number of 919 in the 4166, or rather less than one-fourth of the whole. At present, the Transactions of the Royal Society continue to receive memoirs on Anatomy and Physiology chiefly. The Transactions of the Medico-Chirurgical Society receive mostly those on Medical and Surgical Pathology and Therapeutics.

The great extent to which the volumes of the Medico-Chirurgical Society have proceeded, and the number and value of the communications which they contain, have long rendered it a matter of urgent necessity that a good index to the papers be provided.

The reasons requiring an index to a work of thirty-three octavo volumes are so manifest, and the want of such an auxiliary has been so long felt, and continues to be more forcibly felt every day, that the circumstance requires not more than simple mention, in order to demonstrate the necessity and advantage of such a work. The necessity of an index, indeed, had been felt before, and an attempt to supply the want had been made. After publication of the eighteenth volume, an index was published to the work as far as it had proceeded in 1833. This index, however, was meagre and imperfect, and evidently not suited to the purpose. It would be ungrateful to deny its utility so far as it went; but it probably was merely intended as a sort of temporary expedient.

Very different in all respects is the index now published by the Society. It is what a good index ought to be, and cannot fail to be of the greatest service both to the members of the Society and to those who are in the habit of consulting the pages of the Medico-Chirurgical Transactions.

The work consists of three parts.

After a list of the contributors to the thirty-three volumes, alphabetically arranged, is given a full and detailed table of the contents of each of the thirty-three volumes, the titles of the papers, with the names of the authors as they stand in order in the different volumes. At the beginning of each division, the date at which the volume was published is given, and when there are more than one edition, the date at which each edition was issued.

The second part consists of a list of the engravings, wood-cuts, and other illustrations, contained in each of the thirty-three volumes, with short explanatory notices of what each is intended to elucidate.

The third part is the largest and most important. It is a general index of the subjects of all the papers, and every point in each paper brought under consideration, and of the names of all the authors, with full accounts of each of his contributions, and the matters of which he has treated.

This part is as it ought to be, minute, detailed, and accurate. The author has manifestly perused every paper with great attention, and given an analysis so correct and so detailed, that his labours cannot fail to facilitate very much the researches of every reader who consults the volumes of the Transactions for information.

This index has been constructed, we are informed, by Dr John Hennen, the librarian to the Society. Many persons have depreciated the duty of making an index; and others have looked upon it as a mere mechanical labour of which any one was capable. The labour of the task no one can doubt; but it seems to be by no means known, that it is labour implying a very considerable exertion of intellect. The construction of an index like the present requires not only infinite labour, but much attention to method and arrangement, to scientific distinction and classification, and, in short, the exertion of mental faculties of an elevated order. All this Dr Hennen has accomplished with great ability. If it were true that the construction of such an index could be accomplished by a person of less extensive knowledge, less accurate and philosophical mind, and inferior attainments, the present work only proves that greater merit is due to Dr Hennen for the performance of a task so serviceable to others, and one which renders the treasures of a voluminous publication so accessible to the reading portion of the profession.

ART. III.—1. *The Elements of Materia Medica and Therapeutics.* By JONATHAN PEREIRA, M.D., F.R.S. et L.S., Fellow of the R. College of Physicians, London; V. P. of the R. Medico-Chirurgical Society, &c.; Examiner in Materia Medica and Pharmacy to the University of London; and Assistant Physician to, and Lecturer on Materia Medica at the London Hospital. Third edition, enlarged and improved, including Notices of most of the Medicinal Substances in use in the Civilized World, and forming an Encyclopædia of Materia Medica. Vol. i. London, 1849. 8vo. Pp. 978; and Vol. ii. Part i. London, 1850. 8vo. Pp. 899—1538.

2. *Medicines, their Uses and Modes of Administration; including a Complete Conspectus of the three British Pharmacopœias, an Account of all the New Remedies, and an Appendix of Formulæ.* By J. MOORE NELIGAN, M.D., Edin., M.R.I.A., Licentiate of the College of Physicians of Ireland, Physician to Jervis Street Hospital, Lecturer on the Practice of Medicine, formerly Lecturer on Materia Medica and Therapeutics in the Dublin School of Medicine, &c. Third Edition. 1851. 8vo. Pp. 555.

3. *The Pharmacopœia of the King and Queen's College of Physicians in Ireland, M.D.CCC.L.* Dublin, 1850. 8vo. Pp. 191.

4. *Pharmacopœia Nosocomii in curam Morborum Cutaneorum Fundati, A. D. M.D.CCC.XLI.* Londini, 1850. 32mo. Pp. 48.

5. *Pharmacopœia ad usum Nosocomii Phthisicorum et Pectoris*

Morbis Ægrotantium Accommodati. Editio Secunda. Londini, M.D.CCC.LI. 12mo. Pp. 42.

In the fifty-first and fifty-fifth volumes of this Journal was given an account of the Elements of Materia Medica, by Dr Jonathan Pereira, as the work appeared in the first edition, published in 1839 and 1840.*

In the two articles then devoted to the work, we entered into some detail as to the nature of the work, and the manner in which Dr Pereira had treated his subject. Our limited space permits us not to go over the same ground again; and it must be acknowledged, that while such an account is less necessary, it becomes, in the present instance, more difficult. We propose merely to advert, in a general manner, to the leading characteristics of the present edition, which is the third.

The work is very much enlarged, as may be understood from the fact, that the first volume, and the first part of the second, extend to 1538 pages. The second and concluding part of the second volume has not hitherto made its appearance.

It is impossible also to doubt that the work is improved, so far as the amplitude and accuracy of the information go. In condensation it can scarcely be said to be rendered more acceptable to readers and consultants. Any change, indeed, in this respect, cannot be expected, considering the object and intention of Dr Pereira, which is to provide physicians and surgeons with a complete digest of all the therapeutic and remedial agents employed in the cure of disease, and the alleviation of its symptoms and effects. This purpose has induced him to extend and enlarge a plan, not by any means limited; and the result is, that the work, in its present shape, and so far as can be judged from the portion before the public, forms the most comprehensive and complete treatise on Materia Medica extant in th English language.

Dr Pereira has been at great pains to introduce into his work, not only all the information on the natural, chemical, and commercial history of medicines, which might be serviceable to the physician and surgeon, but whatever might enable his readers to understand thoroughly the mode of preparing and manufacturing various articles employed either for preparing medicines, or for certain purposes in the arts connected with Materia Medica and the practice of Medicine.

The accounts of the physiological and therapeutic effects of remedies are given with great clearness and accuracy, and in a manner calculated to interest as well as instruct the reader. Dr Pereira, while he is desirous to give due weight to the testimony of different authorities in determining the therapeutic merits of different agents, exercises great judgment in pronouncing his final conclusions. This part of Materia Medica and Therapeutics is one of the most difficult to deal with properly; for, while one order of practitioners commend certain agents in strong and decided language, and represent them to be remedies which never fail, others are not less decided in rejecting all testimony, and exercising a degree of doubt bordering upon skepticism and total disbelief. It would be unjust to say, that in such circumstances truth lies in the medium, as has been often done. Truth often does not lie in the medium, in the case of statements regarding medicinal remedies and therapeutic agents. The only mode of finding what is truth, and where truth lies, under such circumstances, is, after comparing the testimony of the most trustworthy witnesses, to determine what evidence is furnished by correct experiments and observations. This Dr Pereira has in general attempted to accomplish; and, if he have not in all cases succeeded, he has made at least as near an approach to the object as under the circumstances can be expected.

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* Edinburgh Medical and Surgical Journal, Vol li. p. 487. Edinburgh, 1839; and Vol. lv. p. 219. Edinburgh, 1841.

Many examples of this careful and delicate mode of balancing conflicting evidence the reader will find in the present volumes.

The limits within which these observations must be confined permit us not to adduce examples of this; but we may refer in general to the descriptions which Dr Pereira has given of the physiological and therapeutic effects of such agents as lead, mercury, arsenic, opium, colchicum, strychnia, and similar articles.

The description of the method of employing the sulphuretted bath as an antidote against the poison of lead is given in the following manner.

"This bath is prepared by dissolving four drachms of sulphuret of potassium in thirty gallons of water (Rayer.) For some purposes a small proportion of sulphuret (as two drachms) will be sufficient. It should be prepared in a wooden bathing vessel.—Used in obstinate skin diseases, as lepra and scabies. If an acid be added to this bath, sulphur is precipitated and sulphuretted hydrogen evolved. Care must be taken lest asphyxia be produced by the inhalation of the latter. This bath is an important and valuable agent in the treatment of saturnine poisoning, especially lead colic, saturnine arthralgia, and paralysis from lead. It renders brown or black and destroys the poisonous qualities of any portions of lead contained on the skin, and thereby prevents the further absorption of the poison. The hands, arms, buttocks, and other parts of the body of painters and workmen in white lead manufactories are sometimes completely blackened by it: but the blackness is readily removed by a brush. The hair follicles frequently contain plumbeous particles, and are in consequence blackened by the bath. The benefit obtained by the use of the sulphuretted bath does not appear to me merely of a preventive nature; but the great relief from already existing symptoms which patients usually obtain by the use of this bath induces me to believe that the sulphuret becomes absorbed and acts in the system as a counterpoison, rendering inert the lead which has already been taken up."—Pp. 482, 483.

"The brown or black incrustation of sulphuret of lead is to be removed, while the patient is in the bath, by the use of a good stiff flesh brush and soap and water. The patient should be then redipped in the sulphuretted bath, and the scrubbing process again resorted to. These proceedings should be continued until the skin no longer becomes discoloured by the sulphuretted bath. In this way the lead deposited on the skin is rendered insoluble and inert, and its absorption prevented. In a few days it will be found that the sulphuretted bath will again give rise to the dark incrustation,—a fact which proves that either the lead is excreted by the skin, or that a portion of the lead had before escaped the action of the sulphuretted solution. These baths, therefore, should be repeated every few days for several weeks,—until, in fact, their use is unattended with discoloration of skin. By these means, relapses of the malady, arising from the absorption of this metal from the cutaneous surface, are prevented.

"The internal antidotal treatment consists in the use of water acidulated with sulphuric acid (*sulphuric lemonade*), or of solutions of the soluble alkaline and earthy sulphates (sulphates of soda or magnesia, or alum). Mr Benson used with great benefit, as a preventive for the workers in lead, treacle beer acidulated with sulphuric acid; the formula for which is as follows:—

"Treacle, fifteen pounds; bruised ginger, half a pound; water, twelve gallons; yeast, one quart; bicarbonate of soda, an ounce and a half; oil of vitriol, an ounce and a half by weight. Boil the ginger in two gallons of water, add the treacle and the remainder of the water (hot), put the whole in a barrel, and add the yeast. When the fermentation is nearly over, add the oil of vitriol, previously mixed with eight times its weight of water: lastly, the soda dissolved in one quart of water. It is fit for use in three or four days. The soda gives briskness, and, saturating one half of the acid, forms sulphate of soda."—P. 732.

The following example of gangrenous inflammation of the mouth and cheek, bore, in its symptoms and phenomena, so close a resemblance to the irritant and phagedenic effects of mercurial poisoning, that it was at first regarded as proceeding from that cause.

"A man affected with rheumatism sent to a surgeon for advice, who, without seeing him, prescribed some pills, one of which was to be taken thrice daily. At the end of the week, his rheumatism not being relieved, he sent his wife again to the surgeon, who ordered the pills to be repeated. Another week elapsed, when the patient requested Mr W. H. Coward, surgeon, of the New North Road, Hoxton, to see him; to whom I am indebted for part of the particulars of this case. Mr Coward found his patient with the following symptoms: fever, great prostration of strength, sore throat, rheumatic pains in the wrists, profuse ptyalism, more than a pint of saliva being discharged per hour, with the breath having the 'mercurial' odour; and on the inner surface of the right cheek a foul ulcer. He ascribed his present condition to the pills, as he had no sore mouth until after taking them. On cutting one of the pills, it was observed to have a light-brown colour, and the odour of opium: hence it was supposed that they were composed of calomel and opium. Purgatives, tonics, and gargles of chloride of soda, were used without avail; and, after some days, Mr Coward requested me to see the patient. I found him in the following condition: right side of the face swollen and slightly red; gums swollen, red, and ulcerated; breath horribly offensive, its odour not distinguishable from that called mercurial. On the inner side of the cheek, near the orifice of the parotid duct, there was a slough about the size of a sixpenny piece; salivation most profuse,—in fact the saliva flowed in a continued stream from his mouth; over the body were observed a few petechia. Notwithstanding the means employed, the man became worse, the sloughing gradually increased until the whole of the right cheek became involved, and in about a week from my first visiting him he died.

"A day or two before his death, I ascertained from the surgeon who had prescribed the pills that they contained Dover's powder, and not an atom of any mercurial preparation."—Pp. 816, 817.

A better season for any details of this description will arrive when the concluding part of the work is published.

In the sixty-third volume of this Journal, April 1845, was given an account of the first edition of the work of Dr J. Moore Neligan, which was published in 1844.* A sufficiently full account of the arrangement and method employed by the author was at the same time given. A second edition of the work was published in January 1847; and the present is the third.

In the course of these transitions the author has evidently improved his work, and makes it a most serviceable Treatise on the present state of Materia Medica, Pharmacy, and Therapeutics.

In speaking of some remedial agents, Dr Neligan shows his judgment by modifying the commendations with which he introduced some remedies. For instance, he expresses himself in terms greatly less confident of the remedial properties of *Monesia*, an article which was manifestly praised much beyond its real merits.

The account given of the therapeutic powers and curative properties of pyroxylic spirit, an agent which has been introduced into the last edition of the Dublin Pharmacopœia, is moderate, judicious, and, according to our own observation, correct.

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* Edinburgh Medical and Surgical Journal, Vol. lxiii. p. 454.

In speaking of Mr Donovan's preparation of liquor of hydriodate of arsenic and mercury, Dr Neligan allows that he has found it fail in effecting a cure in many instances of cutaneous disease, and in others he has seen it produce hurtful constitutional effects, while the disease for which it was administered was invariably aggravated.

At this we are not surprised. Wherever mercury is given in the manner proposed by that medicine, it is more likely to produce hurtful than beneficial results. Dr Neligan admits that these effects he is disposed to ascribe to the action of the oxyde of mercury, and he has, therefore, recently substituted a compound in which the mercury is withdrawn, and its place is supplied by iodide of potassium.

On the subject of cod-liver oil Dr Neligan expresses himself favourably, not, perhaps, too strongly. He thinks it useful as a remedy in every stage of phthisis, but only as an adjunct to other treatment, and adds, accordingly, that where it is employed as a *sole* remedy in the treatment of phthisis, it only gives rise to disappointment.

He is also rather disposed against the large doses in which it is in some instances and by some practitioners given. He sees no advantage in giving it to greater extent than one tablespoonful three times daily (p. 401).

Among new articles, and articles now received into the Pharmacopœia, a short account is given of the uses and effects of indigo, the circumstances in which it is administered, and the mode and doses in which it should be given.

In chapter twenty-second is given a short account of various articles which, though not employed in medicine as remedial agents, are in present use as Colouring substances, Perfumes, Tests, and Pharmaceutical articles. Of this kind are Fusel Oil, Oxalate of Ammonia, Refined Silver, Cyanide of Silver, Orange Flowers, so much in use on the continent,—Carbonate, Nitrate, and Sulphate of Baryta, Metallic Bismuth, Bone-Phosphate of Lime, Ivory Black or Animal Charcoal, Wood Charcoal, Cochineal, Turmeric, Litmus, Lycopodium Powder, Chloride, Nitrate, Hydrated Oxyde of Lead, and Red Lead, Bichromate of Potash, Solution of Caustic Soda, Solution of Chloride of Zink, and Metallic Zink.

Subjoined are two appendices. The first contains an ample list of Formulæ, or directions for preparing various medicinal compounds and remedies, as they require to be administered in different instances of disease.

The second is a nosological table, indicating the medium doses in which all the remedial agents employed should be described.

In conclusion, the work of Dr Neligan, presents in as compendious a form as the subject allows, a most instructive view of the present state of knowledge in Materia Medica and Therapeutics, and as such promises to be most serviceable to the student and practitioner.

In the former notice given of the work, we took the liberty of directing attention to the great multiplicity of remedies with which the Materia Medica now is in some degree overloaded. Little doubt can be entertained that the evil is on the increase, rather than in the way of being abated. It is one, however, for which authors are not in a great degree answerable. It belongs to the subject, and will probably adhere to it for a considerable time to come. The truth is, that when new remedies are introduced into practice, or old ones are revived for new indications, practitioners and consultants expect to obtain, in works like the present, information regarding their effects, the mode of administration, and the rules for using them; and hence, in all treatises proposing to give full and satisfactory information, accounts of these remedies must be introduced. It is only after a long series of years of probation that the true merits of all remedies of this kind can be determined; and hence, no part of practical medicine perhaps is so liable to changes and fluctuations, as that relating to the alleged virtues and the wonted application of remedies and methods of treatment.

The last edition of the Pharmacopœia of the King and Queen's College of Physicians in Ireland was published in the year 1826. After the lapse of twenty-one years, the college felt it requisite in 1847 to consider the question of the publication of a new edition of their work. The preparation of a Pharmacopœia is, however, always necessarily a business of time, since, in many points, it becomes requisite to institute new researches, to obtain accurate information, and, and it may be, to perform new and repeated experiments. In these preliminary operations three years appear to have been occupied; and on the 5th of July 1850, the college authorised the publication of the new Pharmacopœia.

The changes introduced are all either of a beneficial character, or rendered necessary by circumstances.

The work is in the English language.

The various Formulæ, or directions for preparing medicines, are arranged under thirty-seven distinct articles or sections, designated by proper denominations and titles, which are placed in alphabetical order, this being believed to be the method of arrangement which best facilitates the task of reference and consultation.

Several of these titles are the same as in the Parmacopœia of 1826. Of the changes which have been deemed requisite, the most important is the suppression of the METALLICA of that edition, and the distribution of the multiplied preparations derived from the metallic kingdom, under sections respectively denominated, ACETATES, ARSENITES, CARBONATES, CHLORIDES, CITRATES, IODIDES, METALS, NITRATES, OXYDES, PHOSPHATES, SULPHATES, SULPHURATES, TARTRATES, and VALERIANATES.

According to the old arrangement,—

The SULPHUREA appear as a distinct section; and, while some Oxydes were included among the METALLICA, others,—as the Alkalies and Earths,—were not. These incongruities, the college think, are avoided by the method of subdividing the metallic preparations now adopted; and this method, they add, has the additional recommendation of being made to rest upon the electro-negative, rather than on the electro-positive constituent, and thus coming in principle within the most approved classifications of the objects of the mineral kingdom.

It one instance alone it was found requisite to depart slightly from the arrangement now specified. It was thought more eligible to arrange with each alkaloid its saline compounds, than transfer these compounds to the section designated by their respective acid or electro-negative constituents.

It is scarcely necessary for us to offer any opinion on the methods of classification adopted by the King and Queen's College, an incorporation which numbers amongst its Fellows persons of great, varied, and, we doubt not, accurate knowledge, as well as sound judgment. At the same time we cannot refrain from thinking that the arrangement of the METALS here mentioned is not in every sense a happy one. Each metal possesses properties and exercises effects so characteristic and so peculiarly its own, that we think it would have been a more serviceable arrangement, both physiologically and therapeutically, if all the metallic salts of one metal had been arranged together, rather than according to the plan adopted in the present edition of the Pharmacopœia. It appears a plan so much more accordant both with chemical and with physiological principles, to arrange together all the preparations of antimony, all those of arsenic, all those of iron, all those of quicksilver, and those of zink, with such preparations of bismuth and manganese as are used in the practice of medicine, that we think it requires few arguments to show its advantages.

Conversely, according to the method adopted by the Dublin College, the following articles are placed together under the same head.

SECTION V.—CARBONATES. Bicarbonate of ammonia; precipitated carbonate of lime; prepared chalk; carbonate of iron; saccharine carbonate of iron; carbonate of magnesia; heavy carbonate of magnesia; bicarbonate of potash; purified potashes;

salt of tartar; liquor of carbonate of potash; bicarbonate of soda; dried carbonate of soda; soda water; and carbonate of zink.

SECTION VI.—CHLORINE and its METALLIC COMPOUNDS. Chlorine water (bleaching liquor), solution of tercloride of antimony.

Chloride of barium,—old muriate of baryta; solution of chloride of barium; chloride of calcium, formerly muriate of lime, and solution of muriate of lime; liquor of chloride of lime; liquor of chlorinated lime; ammonio-chloride of mercury, formerly ammoniated calomel, or precipitated calomel; corrosive sublimate; calomel; liquor of chlorinated soda; solution of chloride of zink; chloride of zink.

SECTION XV.—IODINE and IODIDES. This is more suitable. Yet iodide of lead, green and red iodide of mercury, iodide of potass, and iodated sulphur, are all placed together.

SECTION XXIII.—*Oxydes.* This section is subdivided into three classes; I. Alkalis; II. Earths; III. Unnamed, but including the oxydes of what are called the METALS. Now, if strict chemical principles are to guide us, are not the whole of these oxydes of metals? It is surely as much and as decidedly a chemical fact that potassium, calcium, and magnesium are metals, as that silver, antimony, mercury, iron, and lead are. The only difference is that the former have so great an avidity, as some chemists express it, for oxygen, or the oxygen for them, that they take that element wherever they can get it, from earth, air, water, and never part with it unless when compelled by the rough usage and ingenious devices of the chemists to do so. Farther, it is difficult to understand why ammonia and potash are admitted into the first of these classes, and soda is excluded from that class; for certainly the mineral alkali, as it used to be named, is as much an oxyde of sodium, as potassa and ammonia are oxydes of *potassium*, and the still problematical *ammonium.* In defiance, nevertheless, of this strong claim on the part of soda, that useful alkaline oxyde is relegated to the section of carbonates; while ammonia and potassa, no doubt undegraded by alliance with, or divorced from carbonic acid, are allowed to figure among the metallic oxydes.

If the subsequent arrangement be adequate to explain this distribution, it is certainly right that it be mentioned. Here it is, then. The first class of oxydes embraces the strong caustic preparations of ammonia and potass, and the *potassa cum calce;* the second contains lime-water and magnesia; and to the third we shall direct attention immediately.

Now, why the caustic potass and the *liquor potassæ,* with the *causticum commune mitius,* lime-water, and calcined magnesia should be associated in these two classes with the metallic oxydes

—far apart from their kindred substances, chalk, carbonate of magnesia, bicarbonate of potass, and bicarbonate soda, potash, and salt of tartar as subcarbonate, dried carbonate of soda, and the solutions of carbonate of potass and carbonate of soda,—are facts, the reasons for which do not appear to us to be easily discovered.

Under the same section, and in the third unnamed class, come the oxydes of antimony; the oxyde of silver; the magnetic or black oxyde of iron; the peroxyde of iron; the hydrated peroxyde of iron; the red oxyde of mercury, or red precipitate; and the oxyde of zink.

Every one is entitled to enjoy his own opinion on these matters. But it must strike most persons accustomed to think on the medicinal applications of iron, antimony, silver, mercury, and zink, that the red oxyde of mercury might have been more conveniently placed with the other preparations of that mineral, that the nitrate of silver and the oxyde of silver should have been placed beside each other, and that the oxyde of zink and the carbonate of zink had better not have been separated.

Section XXVII.—Is the *pulvis antimonialis* a preparation of antimony, not very well understood in nature and composition, rightly placed, first, in a section which contains aromatic powder, compound powder of catechu, compound powder of chalk, opiate powder of chalk, effervescing powder, Dover's powder, compound jalap powder, compound rhubarb powder, and compound scammony powder?

Section XXIX. contains the sulphates and the bisulphates. These are, alum, ammonio-sulphate of copper, sulphate of iron (ordinary green vitriol), granulated, and dried; sulphate of mercury,—is this turbith mineral?—bisulphate and sulphate of potass, and white vitriol.

Section XXX. contains the sulphurets; namely, hydro-sulphuret of ammonia, precipitated sulphuret of antimony, prepared sulphuret of antimony, sulphuret of iron, and liver of sulphur, or sulphuret of potass.

In neither of these two Sections, nor anywhere else, can the reader perceive mentioned an anomalous but very useful saline combination, the *sulphas potassæ cum sulphure*, or polychrest salt. From this we suppose that this article has been expelled from the Pharmacopœia.

The thirty-second Section, denominated Tartrates, furnishes a very curious exhibition. First comes tartarised antimony and its solution; next follows tartrate of iron; then tartrate of potass—soluble tartar, as it used to be named; and, lastly, tartrate of soda and potass, the Rochelle salt, or *sel de Seignette.* There are only four articles. The first is an emetic, or nauseant and diaphoretic and antiphlogistic, and its solution; the second is a very useful chalybeate tonic; the third is a neutral, saline, diuretic, or aperient; and the fourth is also an aperient or laxative. Alliance, in some chemical sense, there may be; but, in physiological and therapeutic properties, there is certainly as little as possible.

We are perfectly aware, that in a Pharmacopœia it is not necessarily understood, that the arrangement should be according either to physiological or therapeutic principles; and that the most serviceable method is that which facilitates reference and consultation. Neither do we attach to the objections now stated much importance. We are aware that it is very easy to make objections and find fault; and not so easy to obviate the one and remove the other, in any human production. But we submit to the College, whether they have not, by the adoption of the method now mentioned, rather increased than diminished the necessary and perhaps unavoidable difficulties of the work of classification.

The THIRTY-FOURTH SECTION contains the VALERIANATES, a class of remedies new, and stated to be efficient. Of these there are four, the Valerianate of Iron, the Valerianate of Quinine, the Valerianate of Soda, and the Valerianate of Zink. It is of course idle and frivolous to object to the arrangement, as it is carried out so extensively; and probably, for the articles now mentioned, is as good as any other.

The Supplement contains Formulæ for the preparation of five articles: Fusel Oil, Purified Ivory Black, Chloroform, Extract of Elaterium, and the Caustic Solution of Soda.

The first of these, Fusel oil, *alkohol amylicum*, has been introduced into the Pharmacopœia, for the reason, that from it valerianic acid is directed to be prepared. Fusel oil is obtained at any large distillery, by taking any convenient quantity of the light liquid which is formed by continuing the distillation for some time, after all the pure spirit has been withdrawn. This light liquid is introduced into a small still or retort, to which is connected a condenser, and heat is applied so as to cause distillation. As soon as the oil begins to come over unmixed with water, the receiver should be changed; and distillation being resumed, and continued nearly to dryness, the desired product is obtained. The liquid drawn over during the first part of the distillation consists of a watery fluid, on which floats a stratum of Fusel oil, which is separated and preserved.

Fusel Oil is said to consist of $C^{10} H^{12} O^{2}$. By exposure to air, it absorbs oxygen, and, it is said, is converted into valerianic acid. As, however, the formula for the latter is $C^{10} H^{10} O^{4}$, it ought not only to acquire oxygen, but to part with hydrogen.

Every one knows how ivory black is purified. No one manufactures chloroform, but purchases it from the druggist. The same may be said of extract of elaterium and the caustic liquor of soda. Of these, therefore, we say nothing.

Several articles are newly introduced into the Pharmacopœia. Of these, the most important are,—Gallic Acid, p. 9; Tannic Acid, p. 14; Muriate of Quinine, p. 21; Strychnia, p. 21; and Muriate of Strychnia, p. 23; Heavy Carbonate of Magnesia, p. 28; Liquor of Tercloride of Antimony, the butter of Antimony of former days, p. 35; Solution of Chloride of Soda, or Disinfecting Liquor, p. 41; Chloride of Zink and its Solution, the disinfecting liquor of Sir William Burnett, p. 41; Decoction of Winter Green, p. 52; Purified Extract of Indian Hemp, p. 58; Infusion of Chirayta, p. 65; Infusion of Spurred Rye, p. 66; Infusion of Matico, p. 67; Donovan's Solution of Arsenic, and Hydriodate of Mercury, p. 71; Red Iodide of Mercury, p. 72; Green Iodide of Mercury, p. 73; Iodide of Lead, p. 75; Iodide of Potassium and its Solution, and Iodide of Sulphur, p. 75; Croton Oil Liniment, Subnitrate of Bismuth, p. 88; Solution of Pernitrate of Iron, and Solution of Pernitrate of Mercury, Nitrate of Lead, p. 89; Purified Saltpetre, p. 90; Creasote Ointment, p. 95; Ointment of Red Iodide of Mercury, p. 96; Oxyde of Silver, p. 106; Tincture of Indian Hemp, p. 152; Tincture of Chirayta, p. 154; Tincture of Spurred Rye, p. 156; Tincture of Matico, p. 162; the four Valerianates, of Iron, Quinine, Soda, and Zink, p. 166, as already stated; and Fusel Oil and Chloroform.

Several articles which belonged to the Pharmacopœia of 1826 are removed. Of these, one is the extract of nux vomica, which has since been admitted into the Edinburgh Pharmacopœia, and the place of which in the Dublin Work is believed to be supplied by strychnia and muriate of strychnia. Of the prudence of this course various opinions will be entertained. The extract of nux vomica was esteemed by many physicians an extremely useful and convenient preparation, because it was rather more manageable than strychnia, and probably not less effectual, when properly administered.

Many of the processes have been simplified, and we think that all have been improved and rendered more in unison with the chemical knowledge of the day. This is particularly the case with the essences and aromatic waters, the methods of preparing which are made so simple, that the apothecary or druggist may prepare them, if he choose to employ the time, himself.

All the ointments, also, are simplified by being directed to be prepared in general from one and the same basis, the *Unguentum Ceræ Albæ.*

It will afford pleasure to the admirers of stability in nomenclature to perceive that Calomel and Corrosive sublimate have been retained as names instead of protochloride and deutochloride, or even chloride and deutochloride of mercury. We have always said that definite denominations which are settled, though they convey no meaning but that of mere names, are nevertheless infinitely preferable to the unsettled and fluctuating names which are made to vary according to every new condition of chemical doctrine, and which are liable to the further disadvantage of perplexing the intellects of the apprentices and assistants of chemists and apothecaries, which are often sufficiently taxed, considering their responsibilities, by the ordinary circumstances of their position.

With regard to weights and measures, a great innovation has been made, which, nevertheless, the College feels confident, will receive the sanction of the public and profession. The old wine gallon of 231 cubic inches, which had become nearly obsolete, has been discarded; and its place is supplied by the imperial gallon, and its subdivisions first made in the London, and subsequently adopted in the Edinburgh Pharmacopœa. Though nothing appears to be accomplished by this substitution of the imperial for the old wine gallon; yet, when with the imperial gallon and its divisions are combined the avoirdupois system of weights, as is done in the Pharmacopæia, the consequences are obvious and considerable. As the fluid ounce and the ounce by weight are both similarly subdivided, and as the avoirdupois ounce of 437·5 grains is the weight of a fluid ounce of water, and the avoirdupois drachm of 54·68 grains (54·68 × 8 = 437·44) is the weight of the fluid drachm of water; when the volume of any liquid is given in imperial ounces or drachms, its weight is obtained by multiplying this by its specific gravity. Thus the weight of 11·5 fluid ounces of proof spirit is 11·5 × ·92 = 10·58 ounces; and 7·75 drachms by measure of pure sulphuric acid weigh 7·75 × 1·846 = 14·3 drachms.

The weights of liquids may be converted, upon the same principle, into measures, by dividing instead of multiplying by the specific gravity.

It is well known that in the Pharmacopœias of the London and Edinburgh Colleges the Troy pound, with its well known submultiples, has been retained. This weight, however, the Irish College has rejected, and in its place they have adopted the Avoirdupois pound; the avoirdupois ounce being, like the Troy ounce, subdivided into eight drachms, and each avoirdupois drachm, like the troy, into three scruples. For justifying this change the College think that there are many reasons. 1*st*, At present the two systems are in use with the apothecary, who makes his purchases in avoirdupois weight, and his sales generally (not in all cases) by troy weight. 2*d*, The manufacturing chemist, who employs the avoirdupois pound and its subdivisions, is compelled, in preparing any medicine according to the directions in the Pharmacopœia, to have recourse previously to arithmetical reductions, which may be tedious; so that time is spent, labour is undergone, and chances of error are augmented.

The College, in short, express a confident opinion, that, though these changes may not be free from objections, yet these are counterbalanced by so many obvious advantages, that they think it right to give the method a fair trial. The most serious of these objections,—that of the old avoirdupois drachm, which is the sixteenth part of one ounce, being confounded with that of the Pharmacopœia, which is double its value,—they allow to have some weight. But they add, that this small drachm,—the half of the troy one,—has nearly gone out of use; and though it were common, it would, they remark, be very unlikely to be mistaken for a weight between which and it, there is so great a difference.

As a final recommendation, the College state that Mr Donovan, who has been long known to have directed great attention to the subject of the simplification of the weights and measures employed by the apothecary, has undertaken to supply,—at a moderate expense, and without any view to personal profit,—the weights adopted in the New Pharmacopœia.

The limits within which this notice must be confined, prevent us from entering into any details regarding the pharmaceutic merits and the therapeutic advantages of the various formulæ in the present Pharmacopœia of the Dublin College. Such a duty, if it is to be attempted, must be deferred to another season. Meanwhile, it is but just to the College to say, that these formulæ bear the appearance of having been considered with great care; and, notwithstanding the remarks which we have felt it requisite to submit, on the method of arrangement, the Pharmacopœia is a publication highly creditable to the body from which it proceeds.

Of the two Pharmacopœias, for the Hospital for the Diseases of Skin, and the Hospital for Consumption and Diseases of the Chest, we have merely to say that both seem well calculated to accomplish the objects which the compilers of these Formularies have in view.

The treatment of the diseases of the skin requires so many peculiar theapeutic methods, and so many remedies adapted to particular forms of disease, that all those who have any experience in the management of cutaneous disorders must admit the advantage, if not the necessity, of some fixed rules for preparing and applying the different remedial agents. The treatment of these disorders requires baths, lotions, vapours, ointments, and embrocations; while the internal or constitutional treatment often requires peculiar combinations of remedies. Feeling the necessity of some uniformity in the preparation of these different agents, the medical officers of the Hospital for Diseases of the Skin have promulgated the present Pharmacopœia, in which full directions are given for the preparation of all the remedies, cutaneous and internal, which are most commonly required.

Though this Pharmacopœia is regulated, to some extent, in the choice of its agents, by the Pharmacopœia of the London College, yet various circumstances have obliged the editors to enlarge their list of substances. Reasons for this must occur to every one conversant with the treatment of cutaneous disorders. Not only, as already stated, are peculiar applications and forms of application requisite; but as no department of practical medicine moves forward more rapidly than that of Materia Medica, various new agents have come into use since the last edition of the Pharmacopœia of the London College was published. It hence results that the editors have been obliged to admit into the Pharmacopœia various chemical and other remedies which are not found in the Pharmacopœia of the College. Of these articles, the following list shows the number and importance.

Pyro-Acetic Acid.
Sulphurous Acid.
Tannic Acid.
Phosphate of Ammonia.
Chloride of Antimony.
Chloride of Barium.
Collodion.
Creasote.
Gelatine.
Glycerine.
Ammonio-Chloride of Mercury.
Chromate of Lead.
Sea Salt.
Hyposulphate of Soda.
Iodide of Sulphur.

Several of these agents have been already noticed, as introduced into the recent edition of the Dublin Pharmacopœia.

The Pharmacopœia from the Hospital for Consumption and Diseases of the Chest contains one hundred and forty-two separate formulæ. Of these there are eight for inhalations of different vapours; five for liniments, mostly revellent and counter-irritating; sixty for mixtures of different kinds; thirty-five for pills, tonic, astringent, laxative, narcotic, mercurial of different sorts, and bechic and expectorant; seven formulæ for powders; and six for lozenges of different kinds.

The substances to be inhaled are hydrocyanic acid, chlorine, chloroform, conia, creasote, iodine, opium, and hops.

Among substances not new, but which are not generally employed, are the pyro-acetic spirit, gallic acid, tannic acid, Indian hemp, codeia, and matico.

The Pharmacopœia promises to be useful not only to the institution, for the use of which it has been compiled, but to practitioners in general, in the management of thoracic diseases.

Art. IV.—*A Letter to the Right Honourable Lord Campbell, Lord-Chief Justice of the Court of Queen's Bench, on the Clause respecting Chloroform in the proposed Prevention of Offences Bill.* By John Snow, M.D., Licentiate of the Royal College of Physicians of Edinburgh; author of The Inhalation of Ether in Surgical Operations. London, 1851. 8vo., pp. 16.

On Monday, the 24th of February 1851, the Right Honourable Lord Campbell brought forward, in the House of Lords, the heads or draft of a bill framed with the intention of preventing certain forms of robbery, and the fourth clause of which was particularly directed against the alleged commission of robbery upon persons who were supposed to have been previously rendered insensible by the inhalation of chloroform. It was remarked at the time, or shortly after the time at which this bill was brought forward, that the learned Lord Chief Justice had taken up rather strong ideas upon the effects of chloroform, and the facility which that agent is supposed to afford for the perpetration of robbery and similar offences.

The clauses is as follows.

"And, whereas, it is expedient to make further provision for the punishment of persons using chloroform, or other stupifying things, in order the better to enable them to commit felonies; be it enacted, that, if any person shall unlawfully apply or administer to any other person, any chloroform, laudanum, or other stupifying or overpowering drug, matter, or thing, with intent thereby to enable such offender or any other person to commit any felony upon the person to whom the same may be applied or administered, or attempted to be applied or administered, or upon his or any other person's property; every such offender shall be guilty of felony, and being convicted thereof, shall be liable, at the discretion of the Court, to be transported for life, or for any term not less than seven years."

Dr Snow is decidedly of opinion that chloroform is most unjustly accused in such circumstances; and that, so far as the reported facts of all the alleged cases of robbery or violations under the insensibility induced or supposed to be induced by chloroform go, not only does the evidence not prove the facts libelled, as they say in Scotland, but they prove that chloroform had nothing to do with these crimes, and could not have been the agent which the delinquent employed.

Dr Snow maintains, in the first place, that chloroform can be breathed and inhaled only by a person willing to inhale it, and able, therefore, to concur in the process of rendering himself insensible. The individual cannot be made insensible, he mantains, merely by dashing in his face, and even his mouth and nostrils, a handkerchief impregnated with chloroform. He must inhale it deliberately and several times. Even, if chloroform be given, that is placed near the nostrils of a child when asleep, the child awakes in nearly every instance, he says, before being made insensible, however gently the vapour may be insinuated. No animal, either wild or tame, can be made insensible without being first secured. If the chloroform be suddenly applied on a handkerchief to the nose of an animal, the creature turns his head aside, or runs away, without breathing any of the vapour. Lastly, when a handkerchief sufficiently wetted with chloroform to induce insensibility, is suddenly applied close to the face of any one, the pungency of the vapour is so great, as immediately to interrupt breathing, and the individual cannot inhale the vapour, even were he desirous to do so.

From these and similar facts, Dr Snow draws the inference, that it is quite impossible, or at least very difficult, without immediate detection, for any one, especially in an open thoroughfare, to render another person insensible so as to perpetrate robbery or any other crime. He thinks that it could only be after long resistance, and the exhaustion consequent thereon, that persons desirous to induce insensibility in the victims of their crimes, could effect their purpose; and long before that could be accomplished, he argues, there must be means of detection and apprehension of the felons.

Dr Snow examines shortly the history and circumstances of several of the cases in which chloroform has been represented to have been administered with criminal intentions, and arrives at the conclusion, that in not one case is there evidence to establish the inference that it been so employed. Dr Snow has consequently infers that legislation on such a subject is not only unnecessary, but likely to be ineffectual. Dr Snow suggests, that while the act may be allowed to stand as a preventive measure, the word chloroform should be withdrawn from it, as likely to be alarming to the public, suggestive to the criminal, and not creditable to the sagacity and gravity of the law.

It is not easy to say what should be done as to those instances in which persons appear to have been affected with sudden stupor and insensibility previous to having been robbed. So far as the term chloroform is suggestive of felonious intentions, the evil has already been done. It may become, nevertheless, a fair question, whether the law does not possess already sufficient means in the ordinary provisions for the detection of crime, if not the prevention of its commission. Where thieves are bent upon robbery, they will readily find means to enable them to carry their intentions into effect, whether they use chloroform or any other article to stupify their victims. The wisest course, in the present state of matters, appears to be to leave the alleged crime to be dealt with by the powers which the law at present possesses.

Art. V.—*On a Remarkable Effect of Cross-breeding.* By Alexander Harvey, M.D., Physician to the Aberdeen Royal Infirmary, Lecturer on the Practice of Medicine in the University and King's College of Aberdeen, and formerly Lecturer on the Institutes of Medicine in the Marischal College and University. Edinburgh, London, Aberdeen, 1851. 8vo, pp. 39.

The effect of Cross-breeding, which forms the subject of Dr Harvey's tract, may be stated in the following terms. In any given case in which a male animal has prolific connection with a female of the same genus, but differing in some instances in species, in others only in variety, that connection exerts upon the system of the female a modification so decided and so energetic, that all her subsequent offspring, though the result of connection with different male animals, present, in figure, colour, aud other external characters, distinct marks of this peculiar influence and modification.

This may be regarded as the general expression of the phenomenon derived from and founded upon a number of individual facts.

The facts are not new. They have been long observed and more or less noticed. Sometimes they were doubted. In other instances they were received with suspension of judgment, as facts which could not easily be referred to any general physiological head. Dr Harvey does not claim the merit of reducing the facts to a general principle. This, it appears, belongs to Mr James M'Gillavray, a veterinary surgeon at Huntly in Aberdeenshire. But Dr Harvey has arranged the whole facts in such a manner, and accompanied them with such comments and elucidations, that he will probably be regarded as the chief promulgator of the physiological and zoological doctrines contained in the present tract.

The first fact given, is the well-known one of the Arabian mare of the Earl of Morton, which, after being connected with the quagga or striped wild ass, not only produced a hybrid or mule, which presented distinct marks of the quagga in the shape of the head and stripes on the shoulders, but afterwards, after connection with an Arabian horse, produced three foals, all of which bore distinct and unequivocal marks of the quagga.

A second instance is given, in which a mare belonging to Sir Gore Ouseley, after being connected with a zebra, gave birth to a hybrid; and, subsequently, upon being served by a thorough-bred horse and an ordinary horse, still produced foals with the original markings of the zebra.

Similar facts have been observed by others, both in the horse family, the ox, the dog, the hog, and the sheep family. There is also, Dr Harvey thinks, reason to believe, from various facts, that the modification holds good in tribes and varieties of the human race.

"Now, there is, it seems, a popular belief, that in the case of a woman twice married, and fruitful by both husbands, the children of the *second* marriage may resemble their mother's *first* husband, both in bodily structure and in mental powers. An instance of this has been communicated to me by the Rev. Charles M'Combie of Tillyfour, as coming under his own observation in this county, and very remarkable. It is obvious, indeed, that in any case,—as in the one just referred to,—where all the parties are of the *same* variety of the human family, the alleged resemblance must be comparatively difficult of verification. But it is equally obvious, that means exist for subjecting the question to a pretty decisive test. There are equally distinct varieties of the human family as of any of the lower animals; and all that is requisite for bringing it to a satisfactory issue is, to observe accurately whether the children of European parents, when the mother has, in the first instance, had offspring by a Negro, exhibit traces of the latter in the colour of the skin, the quality of the hair, the form of the features, &c.; or, contrariwise, whether the children of Negro parents, when the mother had, first of all, been impregnated by a European, manifest the peculiarities of the latter."—P. 8.

The first point in all new hypotheses, is to ascertain that the facts are well founded, and correctly stated. Next comes the mode in which these facts are to be generalized, that is, referred to some more general and better known principle. Dr Harvey thinks that the facts, though not numerous, are well established; and he subjoins the following explanation.

"Now, an ingenious explanation of the phenomenon has recently been offered by Mr M'Gillavray of Huntly. 'When a pure animal of any breed (says Mr M'Gillavray) has been pregnant to an animal of a different breed, such pregnant animal is a cross ever after, *the purity of her blood being lost*, in consequence of her connection with the foreign animal;' and again, 'If a cow, say of the pure Aberdeenshire breed, is in calf to a bull of the short-horn breed, (known as the Teeswater breed), in proportion as this calf partakes of the nature and physical characters of the bull, just in proportion will the *blood* of the cow become *contaminated*, and herself a cross, for ever incapable of producing a pure calf of any breed.' 'It is maintained, therefore (Mr M'Gillavray adds), that the great variety of nondescript animals to be met with are the result of the crossing system; the prevailing evil of which is, the admission of bulls of various breeds to the same cow, *whereby the blood is completely vitiated.*'

"This theory, of course, applies only to that class of animals (the *mammalia*) where the female is provided with a womb, and has her offspring lodged there for a time. And in order to the better understanding of the theory, attention is requested to the following considerations: By the formation of the after birth (*placenta*), a connection is established between the mother and the living creature (*fœtus*) in her womb, through which the latter is continually drawing supplies from the mother's blood, for its growth and maintenance. But there are good grounds for believing that, through the same channel, the mother is as constantly (though, doubtless, in much less quantity) abstracting materials from the blood of the fœtus. Now, is it at all unreasonable to suppose, that the materials in question may be charged with (or have *inherent* in them) the *constitutional qualities* of the fœtus, and that, passing into the body of the mother, and mixing there with the general mass of her blood, they may *impart* those qualities to *her* system? This supposition will, perhaps, appear the less improbable, if regard be had to the length of time during which the connection between the mother and fœtus is kept up, and during which this transference of materials must go on,—a period of some weeks, or even of several months. But the qualities referred to must *in part* be derived by the fœtus from its *male* parent, and be to that extent *identical* with his. The *distinctive peculiarities*, therefore, of this parent may thus come to be *engrafted* on the mother, or to attach in some way to her system; and if so, what more likely than that they should be *communicated* by her to any offspring she may afterwards have by *other* males?

"The influence thus supposed to be exerted by the male parent, through or by means of the fœtus, on the constitution and on the breeding powers of the female, may appropriately be designated *inoculation*-influence. To go more largely, however, into this part of the subject, were beside our present purpose, and would involve details, perhaps fully intelligible only to the professed physiologist. But it is due to Mr M'Gillavray to state, that his theory not only furnishes a satisfactory explanation of the phenomenon, but is consistent with acknowledged facts in physiology, and is borne out to a greater extent than he was perhaps aware, by the known history of blood-diseases."—Pp. 10, 11.

The author then enters on the question of mental influence, or the operation, rather, of certain objects through the medium of the stress upon the nervous system and mind. Here it is unnecessary to follow him. It is sufficient that the principal outlines of his hypothesis be stated, for in that manner its truth or incorrectness can be brought to the test of subsequent experience.

In an appendix are given some curious and interesting statements, which are intended as illustrations of the operation of mental influence even upon the lower animals. Whatever may be thought of the force or applicability of these statements, it is not easy to deny that they are interesting, and afford matter for reflection.

In the concluding part of this appendix the author employs the principle already stated, combined with a doctrine promulgated by the Count de Strzelecki, to explain the great depopulation of the aboriginal races of the American and Australian continents. This doctrine is, that wherever prolific intercourse takes place between the European race and the aboriginal females, the fertility of the latter becomes impaired; and hence this traveller concludes, that a charter for colonization granted to one race becomes virtually the decree for the extinction of the other.

We feel unable to decide or even offer any opinion on this difficult inquiry. It merely appears to us that, if the fact of the females becoming barren after the kind of intercourse stated be well-founded, such a result may be explained in a different mode, without the assumption that the Supreme Being thus employs one race to extirpate another. It seems rather presumptuous in beings of faculties so limited as the human race, to ascribe to the Creator and Preserver of the universe results which may often be owing to their own folly and wickedness.

PART III.

MEDICAL INTELLIGENCE.

I. MATERIA MEDICA.

Instructions for the Preparation of Unfermented Bread. By THOMAS SMITH, M.D., of the Royal College of Physicians and of Surgeons, London, &c. A Practical Treatise on the Therapeutic Uses of Terebinthine Medicines, &c. London, 1850. 8vo. P. 84.

In the sixty-sixth volume of this Journal, pp. 248 and 550,* the attention of readers was directed to the modes of preparing unfermented bread, and the dietetic and medical advantages of using bread so prepared in preference to that prepared by ferment of yeast. The first notice was in reference to the directions of an anonymous writer, who merely designated himself as physician, but which observations showed that they were entitled to great attention. The second notice was chiefly founded on directions given by Dr R. Dundas Thomson in his work on Diet, then recently published. In volume sixty-seventh, p. 310,† attention was again directed to the subject, in consequence of some changes proposed by the first author in his directions.

From the fulness and explicitness of these notices, it would not again be requisite to recur to the subject, were it not that, in the recent work of Dr Thomas Smith, noticed in a former part of this volume, that physician gives a formula not indeed essentially different from the formerly published formulæ, but nevertheless so modified, that this, with other recommendations, form reasons for soliciting to it the attention of readers. As the subject also, though commonplace, is important, not only in a dietetic and physiological view, but also under social and economical aspects, it has strong claims on the attention both of physicians and patients, or those who may become patients.

Dr Smith has now made trial of unfermented bread in various chronic maladies for upwards of eight years.

Dr Smith is convinced of its superiority over the ordinary fermented bread, both in health and disease; and he is satisfied that it would have been ere this in general consumption, had not the cupidity of the druggists, in their exorbitant charges for the alkalies and acids, disgusted the public. One individual actually charged a patient of his 2s. 8d. a pound for the sesquicarbonate of soda, and 2s. a pound for hydrochloric acid, the former of which is worth about threepence, and the latter twopence.

About seven years ago, Dr Smith published in the local papers in Yorkshire the following method of making this bread:—

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* Edinburgh Medical and Surgical Journal, July and October 1846.

† Ibid. January 1847.

Take 5 lbs. of flour.
½ oz. (Apothecaries' weight) of sesquicarbonate of soda.
½ drachm of sesquicarbonate of ammonia.
4 drachms or teaspoonfuls of salt.

Mix these intimately together, and then add the following solution:—
50 oz. or 2½ pints imperial of cold water.
5 drachms of hydrochloric acid.

Immediately on adding the acid solution to the flour and alkaline ingredients, the whole mass must be thoroughly mixed, by constantly stirring with a strong wooden spoon, until the dough has assumed a proper consistence, when it is to be put into proper baking utensils, and placed in a very hot oven.

The cautions requisite in making this kind of bread are,—

1. To mix the soda, ammonia, and salt, intimately with the flour, and the water with the acid. The acidulous mixture is then to be added to the flour, &c., and the whole quickly incorporated. Should any portion of the soda escape the action of the acid it will cause a yellow spot in the bread. This is not of much moment, being more offensive to the eye than prejudicial.

2. The acid should be of the strength ordered by the pharmacopœia: specific gravity, 1·16; 100 grains of which ought to saturate 132 grains of the crystals of the carbonate of soda.

3. Unfermented bread requires longer time to bake, and a hotter oven, than bread made with yeast.

4. No kneading is required in making bread by this process; and the quicker it is transferred from the mixing bowl to the oven the lighter will be the bread. By standing, the gas escapes, and the bread becomes doughy and sad; it cannot, therefore, be too quickly heated.

5. The water to be employed should be as cold as possible. Distilled water, or water which has been previously boiled, ought always to be used, when the bread is intended for invalids.

6. It is better not to mix a larger quantity than 5 lbs. of flour at one time.

This bread is easily made, requires little labour, no kneading, or time for the dough to rise. It costs a trifle more (say 1d. per stone) than bread made with yeast, but has the advantage of keeping longer without becoming mouldy or sour, and is entirely free from any bitter or unpleasant taste, which not unfrequently occurs in bread made according to the ordinary method.

Its dietetic properties are, however, of the utmost importance. Bread which has undergone the panary fermentation is exceedingly liable, in weak stomachs, to turn sour and produce heartburn and flatulency, thus deranging, and in some measure destroying, the perfect assimilation of nutritive aliments. But bread made by the unfermented process is free from these baneful effects. Its daily use in health prevents these symptoms; and it is capable in many instances of correcting that morbid condition of the stomach and intestines on which these symptoms depend. It is also extremely beneficial in assisting to restore the biliary, but more especially the renal, secretions to a healthy condition, as well as in the treatment of various cutaneous eruptions originating in disorder of the digestive functions.

To remove any doubts which might naturally arise respecting the employment of ingredients so corrosive and powerful as hydrochloric acid in one of our principal articles of diet, the following explanation will probably suffice. When leaven or yeast is combined with flour and water, fermentation takes place, the sugar of the wheat is decomposed, whereby carbonic acid gas, acetic acid, and alcohol are evolved. The latter is dissipated in the oven, but the tenacity of the dough prevents the escape of the gas, which inflating its substance, produces the honeycomb appearance, or the eyes, as they are generally termed, of the bread, and on which depend its lightness and porosity. Now if the same results, viz., sponginess and lightness, can be obtained without the decomposition of any of the constituents of the flour, especially a nutritive one like sugar or starch, it follows that bread made on this principle must be more wholesome and nutritious than that made by the aid of fermentation.

In order to accomplish this object of rendering bread light and spongy without the aid of fermentation. numerous experiments have been instituted. Dr Whiting was, Dr Smith believes, amongst the first who succeeded; he took out a patent for his plan in 1836. Since then Mr Deane, pharmaceutical chemist, Clapham Common, Dr Pereira, and others, have been engaged in investigating the subject. The same principle, however, pervades the whole, viz., to cause the disengagement of carbonic acid gas during the process of panification, in order to give lightness to the bread, by the chemical union of such substances as shall accomplish that object without vitiating or destroying the quality of the bread, or rendering it unpalatable. This object is effected by synthetically producing common salt in the dough whilst baking, by the admixture of hydrochloric acid with sesqui-carbonate of soda, whereby carbonic acid gas, water, and chloride of sodium, or common salt, are formed.

The salt produced in this manner is not sufficient to flavour the bread, therefore an additional quantity is ordered. This, however, must in some measure be regulated by individual taste.

Dr Smith has repeatedly tried the different formulæ for making unfermented bread, and has satisfied himself, from numerous experiments, that the one he now recommends will be found to answer every purpose in producing a cheap, palatable, and wholesome article of diet. And so convinced is Dr Smith of its superiority over fermented bread as food for children, as well as healthy adults, that he has banished every other kind from his table.

II. PATHOLOGICAL ANATOMY AND MEDICAL PATHOLOGY.

Instance of EKTOPIA CORDIS, *by* DR FOLLIN. (Archives Generales, 4ieme serie., T. xxiv. Septembre 1850. P. 101.)

The term Ektopia is properly applied to designate certain cases in which the heart is displaced or pushed out of its natural position, along with some deficiency of the enclosing parts.

The heart may be pushed to the right side in cases of empyema of the left pleura, with copious effusion. This, however, is the mere effect of the effusion, and disappears when that is absorbed. This is not *Ektopia.*

This term is applied to those displacements of the heart, in which, from some deficiency in the formation of the enclosing parts, as the sternum, the ribs, the diaphragm, the heart is found in a situation different from its natural. The common point or character is, that the heart is out of the cardiac region; and it may be either in that of the head, that of the chest, or that of the abdomen. The first is rare. The second and third, which are more common, have been distinguished by Fleischmann and Weese under the names of *Ektopia Pectoralis* and *Ektopia Ventralis.*

Under the head of *Ektopia Pectoralis* are comprehended all those instances of displacement, in which the heart protrudes on the surface of the chest, either with deficiency of the sternum and ribs, or these remaining entire, at either extremity of the sternum.

Under the head of *Ektopia Ventralis,* are comprehended those instances in which, from deficiency of the diaphragm, the heart is protruded among the abdominal viscera.

In the first case it is rare to find the heart protruded without deficiency of the sternum and ribs. It has been observed, however, by Weese in the sheep. More commonly the sternum is wanting, or it is divided by a fissure. With this other malformations are usually associated; for instance, the *foramen ovale* open, the *septum* perforated, and the aorta connected with both ventricles. The *pericardium* is sometimes wanting; and in some instances the mediastinum is deficient.

Ektopia Ventralis may be attended either with integrity or more or less deficiency of the sternum and ribs. The prolapsed heart is sometimes surrounded by a membrane like that of a hernial sac.

To these forms of *Ektopia* Breschet has added that in the region of the head, *Ektopia Cephalica*.

For details the reader is referred to the Commentary of Weese,[*] and the Memoir of Breschet.[†]

The following case by Dr Follin gives a good example of this great lesion.

On the 20th August 1850, M. D. Follin exhibited to the Academy a monstrous fœtus, presenting, among other deformities, that of EKTOPIA CORDIS.

In this child, which died after three or four inspirations, the head, the members, and the upper part of the chest, were formed in the normal manner; but from the lower and anterior part of the left side of the chest and the left side of the abdominal wall, several important organs were prolapsed.

The heart made a projection through a perforation in the diaphragm. This organ, directed obliquely from above downwards, and from right to left, had undergone an inversion, such that its posterior surface was directed forwards; the auricles and the ventricles were very accurately distinguished; the heart was completely covered by its pericardial envelop; and the apex of the pericardium was fixed by a long fibrous filament to the external integument. The large vascular trunks made the heart communicate with the interior of the splanchnic cavity of the heart.

Two small lobules were perceived belonging to the left lung. These portions of lung communicated with the pleural cavity by means of a very thin pedicle or stalk, which connected them to the rest of the pulmonary mass.

Beneath the heart was seen the liver, the general shape of which had not been changed. The small lobe of Spigelius occupied, in relation to the stomach, its normal position.

On the left of the liver were placed the stomach and spleen, which was fixed by the gastro-splenic epiploon.

Beneath these was distinguished a certain extent of small intestine. There was no apparent trace of large intestine in its ordinary position. Upon separating the small intestines, which floated freely on each side, were seen the kidneys, sufficiently voluminous; and, beneath them, small bodies, which, by their general configuration, were believed to be testicles, covered by their epididymis. The external genital apparatus was composed of an appendage analogous to the clitoris, surrounded by two cutaneous folds. On each side and below, in a sort of hollow were distinguished two small apertures, corresponding to the openings of the ureters; for the bladder, as well as the anal opening, was wanting; but a little above the genital processes were found, in a sort of depression, two openings, one of which corresponded to the termination of the small intestine, and, after a course of about one inch and a half, terminated in a short sac.

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[*] De Cordis Ectopia Commentatio Anatomico-Pathologica. Auctore Carolo Weese, M. et Ch. D. Accedunt Tabulæ Aeneæ vi. Berolini, 1819. 4to.

[†] Memoire sur l'Ectopie de l'Appareil de la Circulation, et particulierement sur celle du Coeur. Par G. Breschet, D. M., &c. Repertoire Generale, T. ii., p. 1. Paris, 1826.

This child further presented two club feet.

After the cessation of respiration, the heart continued to beat in a manner nearly regular for the space of two hours; the examination of this action, however, could be made regularly only for half an hour. Eight hours after delivery certain contractions were still manifested; but they were very weak, and took place only at rare intervals. After the lapse of seventeen hours, under the influence of a slight puncture, the auricles still underwent contraction; but all action had ceased in the ventricles. These beatings of the heart were few,—about thirteen in the minute, but perfectly regular in rhythm. The following is what was observed.

The auricles and the ventricles were dilated; the auricles were observed to contract with a brisk and sudden movement, and making a movement of withdrawal, which did not allow the muscular fibres to become manifest. Immediately these auricles returned to their original volume and to their state of immobility. Immediately afterwards, the ventricles were contracted. This contraction, which was very different in its expression from that of the auricles, was made in a slow and gradual manner, from the apex of the organ to its base; it might be said that the blood was slowly expressed out of the ventricular cavities. Between the contraction of the auricles, however, and that of the ventricles, there ensued an interval which was more easily appreciable by sight than by the ordinary chronometrical instruments. The amount of time which intervened between these two contractions might be estimated at about one quarter of a second. After their contractions, the ventricles were filled without sudden movement; it might be said that their muscular fibres were relaxed. The ventricular cavities were then swelled and filled with blood before the contraction of the auricles. Then followed a time of immobility of some extent.

During the contraction of the ventricles, the apex of the heart was carried forward and to the right side; at the same time the heart performed on its axis a true rotation, an actual rolling or whirling motion; and here it is necessary to bear in mind the species of inversion which the heart had undergone. The contraction of the ventricular fibres took place from the apex to the base; it was very strong and very distinct at the apex, but diminished from below upwards, so that, at the base, this contraction was not very perceptible. During this contraction of the ventricles, the heart presented, with sufficient distinctness, the figures represented by M. Gerdy upon the muscular structure of this organ. In each ventricle, the contraction of the fibres appeared to be independent of those of the neighbouring ventricles; each system underwent contraction in an isolated manner; and it was towards the median line of the heart, at the point which corresponded to the interventricular septum that the movement appeared to stop. The contraction is then particularly energetic over the lateral margins of the heart. This defect in harmony is then translated into this fact, that the ventricle of the left side in this infant was the first which was raised and carried forward. We endeavoured to perceive, by the stethoscope or by the ear, some murmurs in this heart. Three persons heard distinctly, and at several times, dry and parchment-like murmurs; one of these thought that he heard them double at each time; but it was impossible, in consequence of the rapidity of these contractions, to connect them to one or the other among them. This examination was always made without resting the stethoscope upon the heart. When the movements of the heart became feeble, we observed often two ventricular contractions for one of the auricles; then by little and little, the ventricular contractions ceased to take place, and the auricles alone continued to beat. All sensibility and all movement had for a long time disappeared in this infant, in which the heart alone continued to evince a vital action.

Articular Rheumatism, terminating in Suppuration and Death. (Archives Generales de Medecine, 4ieme serie, T. xxiv. Septembre 1850. Pp. 99—101.)

At the meeting of the Academy of Medicine, 6th August 1850, M. Andral gave an account of a case of acute articular rheumatism, which terminated in death eight days after the commencement of the attack, without any complication capable of explaining this so speedily fatal issue, and presenting this peculiar circumstance, that the affected articulations were the seat of intense hyperemia, with formation of purulent matter.

The following is the account of the case.

A woman, aged sixty-seven years, pale, and of feeble constitution, entered the hospital of La Charité, during the first days of last July, labouring under inflammation of the left lung, which had proceeded to the state of hepatization of the lower lobe. After one single blood-letting, she was afterwards subjected to the employment of tartarized antimony, of which she took, in the course of each space of twenty-four hours, for five or six days in succession, thirty-five centigrammes in a suitable vehicle. She became rapidly well.

This woman was convalescent from her attack of pneumonia, and was taking food. She was, however, recovering strength very slowly when, under the probable influence of a current of air, she was all at once attacked with acute pain in the two shoulders, with swelling and slight redness of the skin round each scapulo-humeral articulation. The right humero-cubital articulation (elbow-joint) was also painful, but in a slighter degree, and without swelling. Fever was at the same time intense. This female was therefore attacked by acute articular rheumatism, void otherwise of any other complication. No symptom in particular manifested its presence in the respiratory apparatus, recently delivered from a severe disease. One blood-letting was immediately performed; and the clot, contracted, small, and strongly separated from the serum, showed a white thick crust, as usual.

Meanwhile, M. Andral found the patient next day so much weakened that he thought it would be improper to repeat the blood-letting. He made trial of the administration of sulphate of quinine, which he exhibited several days in succession, to the amount of sixty centigrammes in twenty-four hours. The disease, contrary to the ordinary law of rheumatism, did not the less proceed to the fatal termination with frightful rapidity, without the supervention of any complication, without any apparatus presenting phenomena which could explain the progressive exasperation of the disease, without any abnormal murmur being heard in the action of the heart, and without the rheumatic disorder being extended to other articulations. The patient died eight or nine days after the attack of her pains, having presented no other symptom, except pain of both shoulders so acute as to make her utter continual groanings, the pulse more and more frequent, and a general state of anguish and rapid debility, which resembled most that which is usually observed in acute peritonitis.

Inspection showed, without any manifest lesion in any important organ, only a rare termination of acute articular rheumatism.

All the organs within the skull, chest, and abdomen, were free from change. The blood examined in the heart and in the large vessels possessed its ordinary qualities. Nowhere was there any trace of phlebitis, nor anything which could justify the belief in the existence of purulent absorption.

After these negative results were ascertained, the examination of the articulations furnished the following facts.

The interior of the two scapulo-humeral articulations was filled by white homogeneous purulent matter, which had all the characters of phlegmonous purulent matter. The synovial membrane presented, throughout its whole extent, redness most intense; and in it were seen innumerable vessels wonderfully injected, and forming a very close network. This injection suddenly stopped on the articular cartilages, which had preserved their ordinary aspect. Among the numerous *bursæ mucosæ* which surround the shoulder-joint, there were on each side two or three which were in like manner filled with purulent matter. All of these communicated with the cavity of the joint, as is the case with several of these *bursæ* in the physiological state; so that, by pressing on them, matter was forced into and filled the articulation, and reciprocally. Outside these cavities all remained in the normal state. The muscular fibre, the ligaments, the tendons, the cellular tissue, had undergone no lesion. The changes were perfectly similar in nature, in intensity, in the two articulations. The articular cavity of the right elbow-joint contained a certain quantity of a liquid a little turbid. All the other articulations were carefully examined, but they presented nothing abnormal.

It may justly become a question in this case,—was the disease really articular rheumatism, or was it not rather from the commencement inflammation of the articular tissues, that is synovhymenitis and desmodia?

III. SURGERY AND SURGICAL OPERATIONS.

The Use of Chloroform before and during Surgical Operations. (Operative Surgery, by Frederic C. Skey, F.R.S. London, 1850.)

One of the most interesting questions connected with the subject of operative surgery relates to the use of anæsthetic agents employed for the purpose of suspending the function of sensation. This question has assumed a moral as well as a medical type. It has been urged that sensation is a natural function of the living organism, and that to suspend it by artificial agency is to set at nought the ordinances of nature; and that man is born to suffering, as evidenced by the sensibilities of his body. If the soundness of this argument be admitted, it would be difficult to draw a line which would define the boundary at which moral and *immoral* suffering meet; or to say in what form of suffering our remedial agents may be justifiably resorted to. The sensibilities of our frame are not given us by nature to the end of promoting pain, but to enable us to avoid it. Corporal suffering is no part of the discipline of the mind; nor can it even be generally asserted that its excess exercises a salutary influence on the character. Every movement of our body instinctively points to the avoidance of bodily suffering; why, therefore, should we not as readily and unobjectionably employ the agency of anæsthetic medicines for the purpose of suspending bodily pain, under the circumstances of an otherwise painful operation, as we endeavour to mitigate the bodily suffering of any other patient, cast down on a bed of sickness? Will not the objection to the anæsthetic action of opium to a region affected by a neuralgic pain, or to the system generally, hold as strongly as that of another agent of the same principle given to avert the pain of an operation?

The medical arguments against the use of anæsthetic agents have a somewhat better foundation. That great and sudden determination to the brain, and an unnatural circulation of venous blood, results from their employment, is undeniable.

It is undeniable, if the quantity administered be large, and long continued, that symptoms resembling those of apoplexy present themselves, in the form of extreme congestion of the vessels of the face, stertorous respiration, and total insensibility; and it cannot be denied that occasionally its full administration leads to headach, vertigo, and languor of some days' duration; and cases are recorded in which even death itself has followed in the course of an hour or more after its employment. It must be observed, however, in pursuing this question in strict accordance with the laws of evidence, that we have no *proof*, in the cases above referred to, that death was the direct effect of the supposed cause. The parties administering it were not fully experienced in the mode of its application. They entertain the *opinion*, that death was referable to it, while it cannot be disputed that the fatal issue may have been attributable to other causes; and, in one example, it appears more reasonable to refer the death of the individual to a suspension of the function of respiration by violence, than to any obnoxious agent circulating through the lungs or brain. On the other hand, the records of St Bartholomew's Hospital point to its successful administration in upwards of nine thousand cases; in not one of which, including the aged and the young, the healthy, the infirm, and the asthmatic, has its employment left a stain on its character, as an innocuous agent of good. Under all circumstances, its careful employment may be unhesitatingly resorted to in all cases, excepting only such as are marked by determination to the brain of an apoplectic type; secondly, under circumstances of great and serious exhaustion from loss of blood; and, thirdly, in diseases of the heart. In these conditions of the system, it is perhaps better avoided.

The agent in general use is chloroform, and one word may be added as to its administration. It appears indisputable that its influence on sensation precedes that on consciousness. I have employed it on several occasions in which a patient has been conscious of all that has been passing around, and yet who has declared himself to have been totally insensible to pain. This state of his system has arisen from the moderate use of the agent, ample, indeed, for all purposes of utility, though somewhat difficult to regulate in quantity sufficient for the required object.

I prefer its gradual administration. I do not think it desirable to exclude atmospheric air, employed as a diluent during the process of inhalation. Its influence should be gradual, not sudden. I consider its application through the medium of a cambric handkerchief laid on the face, preferable to the use of instruments made for the purpose of excluding atmospheric air; and food should be rigidly avoided before its administration, otherwise sickness will frequently follow.

Against the occasional convictions or objections of others to its employment, I place the strong, and to my own mind the unanswerable, fact, that it has been successfully used in so large a number of cases in St Bartholomew's Hospital since the period of its introduction; that these cases have been indiscriminately taken, and that its objections have not yet made their appearance before the observant eyes of the medical staff of that institution, either by promoting danger during the operation, or protracting the recovery of the patient after it. In one class of cases its employment is especially applicable, viz., in that form of disease in which the pain of an operation is the chief warrant for its non-performance, and in which the recovery from a chronic disease is left to nature that might be greatly hastened by the hand of art; such, for example, as the removal of a piece of dead bone.

Up to the period of the introduction of chloroform, a surgeon was very unwilling to subject a patient to the painful process of sawing and chipping away portions of dead bone, with a view to reach the medullary cavity, because the operation was both a painful and a protracted one. The consequence was, that an hospital bed was occupied by a patient thus affected, for many months, to the exclusion, perhaps, of three or more claimants who would have successively occupied it. By the aid of chloroform the operation is now performed unconsciously to the patient, and the period of his recovery greatly abridged. With the three exceptions above mentioned, I cannot hesitate in strongly recommending its administration in all cases of large surgical operations, believing its discovery to be the greatest blessing conferred on the profession of surgery during the last century; and although I have seen its employment pushed, on many occasions, to the apparent verge of apoplexy, I cannot say, even in such examples, that the good has not largely predominated.

Case of Subclavio-Axillary Aneurism treated by Operation, terminating favourably notwithstanding the occurrence of Phlebitis. By Mr Skey. (Operative Surgery, &c. 1850.)

In the month of January 1841, I was consulted by the Rev. Mr P—— for numbness of the left hand and arm, which had existed for a period of about two months. He had observed it also to be more susceptible of cold than the opposite limb, and that it required the application of artificial warmth to enable him to use it while dressing. The hand was pale, more especially that part which is supplied by the median nerve, the little and ulnar half of the ring-finger being affected in a less degree. No pulsation was felt in the radial artery. The brachial artery, especially at the lower part, beat languidly, and pain was felt in pressing the finger along the track of the vessels. Above the clavicle, just half-way between the two extremities of the bone, I perceived a small tumour, pulsating synchronously with the heart, about the size of half a hen's egg. Its contents were partly fluid and partly solid. Pressure on the tumour reduced it greatly in size, and stopped the circulation in the brachial artery. I could trace the line of the trunk of the vessel above the tumour, to the extent of three-quarters of an inch upwards, to the scalenus muscles.

On the following day a consultation with Sir B. Brodie determined the necessity of an early operation, and in this opinion Mr Travers also concurred.

On Mr P——'s return to town, after a necessary absence of four days, I found the tumour to have increased one-third in size, and the numbness in proportion, and it had encroached in the same degree on the trunk of the artery above. He suffered considerable pain along the side of the neck and arm, particularly when in a recumbent position. The peculiar situation of the aneurism, involving the portion of the vessel which lies on the lower edge of the first rib, and yet more subclavian than axillary, and the positive advance of all the symptoms during the short period of four days, determined me to perform the operation immediately; for I considered, that if deferred, sufficient space would not be left to apply the ligature with safety around the artery, without detaching or dividing the *scalenus anticus* muscle, a course I did not look upon with indifference, notwithstanding its recommendation by Baron Dupuytren.

I performed the operation on the 26th of January, assisted by Sir B. Brodie and other gentlemen.

I commenced an arched incision about three inches above the clavicle, close to the outer border of the sterno-mastoid muscle, and carried it a little outwards, curving it in towards the clavicular origin of the muscle, hich I exposed to somewhat more than half its length. This flap, convex towards the acromion, I reflected inwards with the platysma muscle. A little careful dissection with a blunt silver knife exposed the lower belly of the omo-hyoideus muscle, and a portion of the sac, through the walls of which the pulsations of the artery were visible. On the inner side of the base of the wound the external border of the scalenus was also exposed, and by tearing away the cellular tissue in this space, by means of a blunt hook and a silver knife, the *transversalis colli* and supra-scapular arteries were brought distinctly into view, arising from the thyroid axis within the scalenus muscle, and proceeding outwards across the wound to their destination. Above the *transversalis colli* was felt the subclavian artery, and above the artery were seen the lower branches of the axillary plexus of nerves. The vein was not seen. I divided the cellular tissue covering the artery, fully exposed it, and found it perfectly healthy. Having slightly detached it from the rib, I had no difficulty in passing around it an armed needle, and encircling the vessel with a ligature at a quarter of an inch on the outer side of the scalenus. On pressing the artery at the situation of the ligature all pulsation in the sac ceased. I then tied the thread. The operation was completed within ten minutes. The quantity of blood lost did not exceed one drachm.

Two hours after the operation, Mr P—— complained of a sense of pain in the region of the sac, and of the ligature about the artery, and shooting pain towards the heart, and along the external jugular vein, difficulty of swallowing, and pain down the inner side of the arm. The temperature of the limb was somewhat increased. Pulse during health 58, now 70. Two hours later, catching of the breath, with frequent sighing. Considerable difficulty of swallowing, as though caused by the presence of some body pressing upon the œsophagus in the situation of the origin of the subclavian trunk from the aorta. This sensation he described most precisely. Pulse 84 and full.

These unpromising symptoms abated under the influence of a large dose of nitre and tincture of henbane His body was bedewed with perspiration, and his breathing became more regular. The temperature of the limb was still increased above the natural standard. He perspired copiously through the night, which was passed without sleep.

On the following night he was again attacked with difficulty both of breathing and of swallowing, and pain along the arm. I repeated the nitre and henbane. Bowels relieved by injection. On the third day he suffered from continued cough, with difficulty of breathing; his countenance was anxious; his sense of weakness was very great. Tincture of henbane, one drachm. On the fourth day had slept for three hours. Cough. Had awoke with nightmare, and a tingling sensation in the left hand. He was now placed on a water bed, to which may be attributed a severe attack of general rheumatism, accompanied by pains about the loins and sacrum, and shooting pains down the legs. Colchicum and Dover's powder prostrated him. His urine became very high coloured and scanty. He was removed on to a feather bed. The wound had healed by the eighth day. These symptoms were followed by a painful attack of chronic phlebitis of the left leg and thigh, and the foot became large from œdema. This disease affected the saphena, major and minor, the femoral, and even the external iliac vein, and was, at its height, so severe as to create some alarm in my mind as to my patient's recovery.

I excoriated the surface with hot water over the track of the vessels, and rubbed in an ointment, composed of one drachm of *unguentum hydrargyri*, and twenty grains of extract of opium. He took internally two grains of calomel, and one-eighth of a grain of morphia. This I repeated each night, rolling the thigh in flannel.

This treatment proved successful, and at the expiration of a week he had lost all sense of tenderness over the veins, and the œdema subsided.

On the thirty-second day Mr P. complained of pain in the left arm, and I observed the basilic vein to be the seat of the same disease as had attacked the veins of the leg. I treated it with the blue ointment and opium, and with the same success.

In the meantime the sac became greatly reduced in size, and the hand had regained its sensibility and its temperature. The ligature continued firm; but, though unwilling to employ any kind of force, I drew it obliquely in all directions, and wound it around a small roller of plaster. I felt satisfied that it was not detached from the old vessel, because it rose and fell with the first rib in every act of respiration.

I removed it on the forty-seventh day, without force, and without the escape of a drop of blood. The depth of the wound, as indicated by the length of the ligature, was one inch and an eighth. The pulsation in the radial artery returned on the fifty-first day. At the present date, which is nine years after the operation, Mr P. has had no return of disease, and is in possession of good health.

Notice of a Case in which the Loss of the greater part of the Lower Jaw was supplied by means of a Silver Chin and Tongue Support.

(Archives Generales, 4ieme serie, T. xxiv., p. 10. Septembre 1850.)

In the fifty-seventh volume of this Journal, page 120, January 1842, Sir George Ballingall gives the account of Alphonse Louis, a soldier in the French Artillery, who had received, from the splinter of a shell at the siege of Antwerp in 1832, a wound of the face so extensive and destructive, that a portion of the cheek, of the upper lip, the soft palate, and nearly the whole of the lower jaw, with its coverings, were carried away. To remedy the deficiency thus produced, the man having, under careful treatment, recovered from the immediate effects of the injury, an artificial substitute was constructed of silver by M. Verschuylen, a skilful artist of Antwerp; and the soldier, at the date of the original account communicated by Sir William Whymper to the Medical Gazette, was in good health and spirits, and enjoyed life as much as any person could be expected to do after a mutilation so extensive, and affecting the prehensile organs of nutrition and those of speech so severely.

There died lately, that is, in the month of July, or the beginning of August 1850, at the Hotel des Invalides in Paris, at the age of sixty-four years, an invalid soldier who had suffered, thirty-nine years previously, an injury very similar in nature and extent, and for which he was obliged to wear an artificial silver chin.

This man must have been born in 1785; and he must have received the wound of the chin, according to the account, in the year 1811, when he was twenty-six years of age. He had died in July 1850 of the consequences of *pericarditis;* and M. Hutin, the chief surgeon of the hospital, presented to the Academy of Medicine, on the 20th August 1850, the plaster mask or cast of the face, showing the extent of the parts carried away

It appears that the man was struck on the lower and left lateral region of the face by the blow of a cannon shot, which completely carried away the chin. The skin of the face, the cellular tissue, the muscles, the vessels, the nerves, bones were violently lacerated, bruised, and rent away; the lower maxillary bone had almost entirely disappeared; there remained only the condyles, the coronoid processes, the sigmoid notches, and about one centimetre and a half of the portion of the branches by which these parts are supported. The lower wall of the mouth was in like manner torn away; the genio-glossi and genio-hyoid muscles, in one word, all the parts forming the supra-hyoid regions, had disappeared, forming a large wound, bounded below by the hyoid bone, on the sides by the parotid regions, above by the palatine vault and the tongue; the superior dental arch and the portion of the cheeks situate above the ducts of Steno being left uninjured. The tongue had escaped in the greater part of its extent; but its inferior attachments, greatly lacerated, had disappeared in its entire anterior half.

At the time of his admission to the Hospital of the Invalids, this man subsisted only on liquids or a clear soup, which was painfully directed to the œsophagus. Speech was unintelligible; respiration was constrained. Subject to frequent cough, he was no longer capable of retaining or expelling externally the bronchial mucous excretion, which advanced beyond the palatine velum. He lost the greatest part of the saliva; the digestion of food was imperfectly performed; and he became more emaciated daily.

It was at this critical state of the man's symptoms that a silver chin, provided with a plate to support the tongue, was fitted to the parts; and this remedied, in some degree, the inconveniences now specified. Mastication alone was always deficient, from the want of the lower dental arch. In process of time the tongue was retracted towards the hyoid bone. Its apex having become thick and rounded, was depressed. Upon the whole circumference of the wound the skin had rounded with the mucous membrane, and was cicatrized with it. The cicatrized and the neighbouring parts were of a bright red colour. On the left side of the face the retraction of the soft parts had been sufficiently strong to uncover and leave bare the whole dental arch. The tongue, left to itself, was raised with great difficulty; if it was raised by the aid of an instrument, the observer remarked intimate adhesions with the neighbouring parts; the sublingual glands atrophied, indurated, of a red brown colour, were agglutinated to its lower surface; and the organ was kept in its depressed position by means of a dense fibrous tissue of little sensibility. Smell had lost none of its acuteness. With the sense of taste it was otherwise; the patient was indifferent to the alimentary articles presented to him.

IV. OBSTETRICAL PHYSIOLOGY.

Case of Vagitus Uterinus. By ALFRED S. TAYLOR, Lecturer on Chemistry and Medical Jurisprudence in Guy's Hospital. (Guy's Hospital Reports, Vol. vii., Part i. P. 231. London, 1850.)

Cases of *vagitus uterinus* are by no means common, and many alleged instances of this kind, reported in medico-legal works, are unworthy of credit. Any authentic or well-observed case is, therefore, acceptable. The following has been communicated to me by Dr R. Crothers, of Moy, County Tyrone. In March 1841, he observes, I was called upon to attend Mrs W—, in labour of her sixth child; her former labours had been quick. On my arrival I found her suffering from pretty strong pains; and on examination the membranes were tense, and protruding through the *os uteri*.

The labour not advancing so rapidly as I expected, I ruptured the membranes, found the face presenting, and apparently arrested at the brim. I endeavoured to move it into a more favourable position, when, happening to introduce a finger into the child's mouth, I was very much surprised to hear a *distinct cry*, which was repeated two or three times, and so loud as to alarm the mother and attendants. The former was quite frightened, so that I had a good deal of trouble to compose her. I do not now remember if the child cried afterwards, without the fingers being introduced; but several times it did so, and so audibly, that I think the lungs must have been pretty well filled with air. I was obliged to complete the delivery by the forceps. The child is now a fine healthy boy.

Remarks.—The possibility of a child *in utero* having its lungs so filled with air, as to be able to utter an audible cry, has been doubted. The above case, with a few others of a similar kind, reported in medical periodicals, removes all doubt on the subject.

In all the authentic instances that have been hitherto published, the uterine cry has been heard only where the face has presented, and the accoucheur has by any accident introduced his fingers into the mouth of the child. The air thus finds a passage to the lungs.

The only case in legal medicine on which the production of a uterine cry has any bearing, is in the application of the lung-tests in cases of infanticide. The air found in the lungs of a child may have been received into them before birth. Thus the fact that these organs floated on water, either entire, or when divided into small portions, would not furnish conclusive evidence that the child had been born alive. It would merely prove the establishment of respiration, and not the fact of birth. These circumstances are, however, so well known to medical witnesses, that they scarcely require to be adverted to. The uterine cry has less interest, in a practical view, than vaginal respiration during the passage of the head; because, in a case of unassisted labour, it is not easy to perceive how it could possibly occur; and if an accoucheur were present, then the case would not be likely to come before a medical practitioner as one of infanticide.

V. TOXICOLOGY.

Two Cases of Poisoning by Arsenic.—Recovery under the free Use of Tartarised Antimony. By Alfred S. Taylor, Lecturer on Chemistry and Medical Jurisprudence at Guy's Hospital. (Guy's Hospital Reports, Vol. vii., Part i. P. 203. London, 1850.)

The subjoined cases occurred recently in the practice of Mr Beardsley, of Heanor, formerly a student at Guy's Hospital. They illustrate forcibly the propriety of producing an early expulsion of the poison from the stomach by the aid of a quickly-acting emetic.

Case I.—The first case was that of a little boy, six years old, who swallowed a teaspoonful of the white arsenic of the shops. It was left on the floor of the house during the night, for the crickets to eat, and the child getting up first in the morning, found it, and ate it all up. In a very few minutes he was taken ill: there was vomiting; pain at the stomach; excessive thirst; cold extremities; quick and feeble pulse. At this juncture the parents had some antimonial wine in the house, which they administered, and the child appeared better. When Mr Beardsley arrived and was informed of this, he gave a full dose of the *Antim. Tart.;* vomiting was freely excited; the bowels were rapidly opened, and the child recovered with no further bad symptoms. The child was not seen to eat the arsenic, and possibly some might have been spilled, but none could be found, and the child was followed down stairs as quickly as possible; but the poison had been swallowed.

Case II.—The next case was that of a girl, 22 years of age. She bought two drachms of white arsenic, with the intention of poisoning herself. She was observed all Monday to be very unsettled, and refused food at dinner. Just before tea she purchased the arsenic, and, instead of tea, she put the arsenic into a cup, and poured hot water over it, and drank it off. She was immediately seized with violent pain in the region of the stomach; burning heat in the throat; and syncope. Mr Beardsley was immediately sent for. When he saw her, which was only *half an hour* after she had taken the arsenic, she had cold extremities; very anxious look; pulse quick and hurried; violent pain in the stomach and bowels, which was very much aggravated on pressure.

The fauces had been tickled to excite vomiting, but ineffectually; and an ounce of castor-oil and some milk had been administered. An emetic of sulphate of zinc was now given to her; but as this did not act, six grains of emetic tartar were subsequently administered. Most copious vomiting ensued, and the patient immediately said she was better. She stated that the ejected matter was similar in taste to that which she had taken in the cup, and said it was *sweetish*. Warm water and more emetic tartar (three grains) were administered, and she again vomited two or three times. She took two more doses of tartar emetic, and then violent purging, as well as vomiting, ensued. Next morning she was better; the pain had entirely left her. She took the remainder of the antimonial mixture, and she perfectly recovered; in fact she was almost well on Wednesday; she only felt debilitated on the Tuesday.

In this case, *two drachms* of powdered arsenic were taken in *warm water* on an *empty stomach*. The treatment was what Dr Beck says should never be adopted, and yet the recovery was rapid in both cases. It may be mentioned that the girl had some melted butter given to her before vomiting was established, *i. e.*, before the emetic tartar was administered.

Remarks.—The use of tartarised antimony as an emetic has been generally condemned in cases of poisoning, because it has been supposed to have a tendency, during the nauseating stage, to promote the absorption of a poison. The above cases, and some others which might be quoted, show that this danger is of a hypothetical kind, and based on physiological principles not applicable to the treatment of such cases. If tartarised antimony aids absorption, it very quickly promotes the expulsion of the poison by vomiting; and the latter mode of operation is much more beneficial than the former is injurious. Better evidence of this could not be afforded than that yielded by the two cases here reported. Case 1 was that of a child only six years old. The quantity of poison swallowed was a teaspoonful, about 150 grains, an enormous dose when we consider the age of the patient. Further, it was swallowed in the early part of the morning, while the stomach was empty; and the rapid action of the poison was shown by the very early occurrence of the symptoms. Admitting that the whole teaspoonful of arsenic was not taken, it is quite clear that enough was swallowed to cause death; and the good effect of the tartar emetic was well indicated by its removing the early collapse.

In the 2d case, *one hundred and twenty* grains of arsenic were taken also on an empty stomach, and in half an hour the girl was seen by Mr Beardsley, with all the symptoms of arsenical poisoning well developed. If she had been left to herself, there can be but little doubt that this girl would have died. The exhibition of nine grains of tartar emetic in two doses placed her out of danger, by the apparently complete removal of the poison from the stomach. It is remarkable, too, that the girl perceived the same sweetish taste in the matter ejected as in that which she swallowed, which was simply white arsenic, diffused and dissolved in warm water. This is the *taste* assigned to arsenic by Dr Christison.

Had the hydrated sesquioxide of iron been administered to these two patients, smultaneously with the emetic, their recovery would have been certainly ascribed to it, and not to the tartarized antimony. The results show, therefore, that the so-called antidote is not required, provided there be speedy and early vomiting, while, on the other hand, the swallowing of any quantity of hydrated oxide of iron, when arsenic has been taken in the form of powder, will be attended with no benefit, if vomiting have not been freely promoted, or the stomach-pump assiduously used.

These cases show that there is an unfounded prejudice against the use of tartar emetic, as a substitute for the sulphate of zinc. The danger is imaginary, while the benefit was here made at once apparent by the entire cessation of the urgent symptoms. As tartar emetic may be given in much smaller doses than sulphate of zinc, and as it is more certain in its operation, the success attending Mr Beardsley's employment of it will, no doubt, induce other practitioners to resort to it in cases of poisoning. It has the advantage, too, of acting on the bowels as well as the stomach, and thus serves more readily to carry out of the body the unabsorbed portions of arsenic. It cannot be regarded as a counter-poison. Its beneficial operation in these cases was solely due to its powerfully emetic properties.

Case of Poisoning by the Bichromate of Potash—Recovery after Four Months. By ALFRED S. TAYLOR, Lecturer on Chemistry and Medical Jurisprudence at Guy's Hospital. (Guy's Hospital Reports, Vol. vii., Part i. P. 214. London, 1850.)

Instances of poisoning by the bichromate of potash are so unusual, that the details of any well-observed case must be always acceptable to toxicologists. The following occurred in the practice of Mr E. Bishop, of Kirkstall.

On Monday, the 11th of October 1847, Mr Bishop was hastily summoned, about eight o'clock in the morning, to attend the son of C. B—, a dyer, who was said to have swallowed poison, with the intention of destroying life.

Half an hour after the youth had taken the poison, he was found labouring under the following symptoms: Face exceedingly pale, cadaverous, and covered with cold perspiration; the pupils dilated and fixed; pulse exceedingly feeble; cramp in the calves of the legs; and almost total insensibility; occasional vomiting, attended with violent epigastric pain.

Mr Bishop was informed by the young man's father as to the character of the poison, and he found that vomiting had taken place very soon after the substance had been swallowed; the vomited matter at first consisting of the morning's meal (which had been taken recently), mixed with the poison, but afterwards nothing came up but thin glairy fluid, of a pinkish colour.

Half a drachm of sulphate of zinc was immediately administered with some warm milk, which was at hand. This was speedily ejected, tinged of a pinkish hue, and having a very sour smell. Olive oil and white of egg were given, with copious draughts of warm water. All the ejected matters were coloured, even after the administration of the magnesia; hence the stomach-pump was used, until the washings of the stomach became colourless.

The patient now complained of a burning pain at the pit of the stomach, and of a sense of dryness and heat in the throat, accompanied with excessive thirst. Vomiting and straining still occurred at intervals. He was allowed occasional draughts of milk and water. In about two hours and a half the vomiting had subsided, and he began to assume his natural look. The temperature of the skin rose; and, with the exception of slight epigastric pain, and dryness in the fauces, he seemed comparatively comfortable. The pulse was 100, and rather full; the pupils responded to light. The patient was calm, and can give a minute account of the occurrences of the morning.

Eight o'clock P.M., twelve hours after the poison had been swallowed. Very severe gastro-intestinal inflammation had set in, accompanied with severe cramp in various parts of the body, particularly the calves of the legs and inner parts of the thighs. The skin was hot and dry, cheeks flushed, countenance indicative of anxiety; there was pain in the head; pulse 120, hard and full; respiration rapid; epigastrium and abdomen very painful, not bearing the slightest pressure; there was constant straining and retching. He was bled; and calomel and opium, with other remedies, were administered.

October 12th, 6 o'clock A.M.—Blood buffed and cupped; vomiting had ceased; the countenance was not so anxious; the pain had abated; the skin was dry and hot; tongue dry, and covered with a dark brown fur; pulse 100, full and jerking; the pain was still very much increased on pressure, over the whole abdomen; patient complained bitterly of the taste of "the chromate in the fauces;" the respiration was calm; the bowels had not acted; the cramp had subsided. Leeches were applied to the abdomen.

12 *o'clock.*—Symptoms subsiding.

8 *o'clock, vespere.*—The patient was still going on favourably; the bowels had acted once.

14th, 4 o'clock A.M.—Mr Bishop was sent for to see the patient, who was reported "dying;" he found him exceedingly ill. The skin was cold and clammy, face pale, eyes sunk, feet and hands cold,—pulse scarcely preceptible,— abdomen swollen and tender. About two hours previously, violent purging had commenced, and had been almost incessant; the bowels were evacuated as he lay in bed; the evacuation consisted of mucus and blood.

Ordered bottles, filled with hot water, to be applied to feet, hands, and thighs, and gave hot brandy and water; in two hours' time the pulse rose, and the bowels were quieter. A starch enema, with tincture of opium, was administered.

12 *o'clock.*—Enema retained two hours; brought away a little feculent matter, tinged with blood: pulse 120; great thirst; face not so pale as in the morning; abdomen tender and swollen; frequent twitches in the muscles of the calves of the legs. An opiate suppository was introduced within the anus, and hot bran poultices were applied to the abdomen.

8 *o'clock.*—The straining and purging have nearly ceased; the skin was hot; the pulse 100, and firmer; thirst excessive; abdomen not so large, but painful on pressure.

15th.—Purging had again returned, but not so violent as before; stools contained feculent matter; tenesmus not severe; skin cool; thirst abated; abdomen very tender in the region of the sigmoid flexure; distension slight.

16th.—The symptoms were subsiding; the pain was relieved; the bowels had acted once, and the evacuation was natural.

December 14th.—Convalescence had been exceedingly slow; ulceration of the bowels having set in, and with difficulty been subdued by means of nitrate of silver and opium, and successive blisters on the abdomen. There was considerable emaciation, with urgent dyspepsia.

February 14th, 1848.—Had no pain in the epigastrium; appetite and digestion good; bowels habitually costive.

To have change of air and regular exercise.

Remarks by Mr Bishop.—"The cases of poisoning by this substance, which is now commonly used in the arts, are rare; no antidote is pointed out in toxicological works. But the first object is evidently to get rid of the poison; the second, to decompose what cannot be thus got rid of. The first object is to be effected by emetics and the stomach-pump. I should be inclined to rely most on the latter. The second, perhaps, will be best effected by the alkaline earths, although I should rather suspect the activity of chromate of lime. As near as I can ascertain, this young man swallowed *two ounces* of the salt; he took as much as a handful out of the tub, and dissolved it in warm water; and so intent was he on destroying life, that, while dissolving it, he chewed several small crystals. Vomiting occurred in about five minutes after he swallowed the solution.

"From the violence of the symptoms, it seems probable that a far less quantity than what was swallowed would destroy life: but it must be borne in mind that breakfast had just been taken,—a large mess of pottage, with which the poison had become mixed, and afterwards expelled. Had so large a quantity come in contact with the walls of an empty stomach, I think there can be little doubt that death would have ensued speedily from the shock to the nervous system, before there could have been time for inflammatory symptoms to have come on."

To these remarks Mr Taylor adds, that in his opinion the patient owed his recovery to the very active and judicious treatment pursued by Mr Bishop. It will be observed, that the case was under treatment from October 11th to February 14th, a period of *four months*. In the latter stage, the urgent symptoms were undoubtedly due to the local action of the poison on the mucous membrane of the stomach and bowels. In the only two cases of poisoning by the bichromate of potash with which Mr Taylor has met, one proved fatal in twelve hours, and the other in five hours. In the first, there had been neither vomiting nor diarrhœa; and in the second, vomiting only. The vomited matters, as in Mr Bishop's case, consisted of mucus mixed with blood. The case here reported, and which is now for the first time published, is, he believes, the only instance of the chronic effects produced by this poison hitherto recorded. It clearly proves that, as in poisoning by the strong mineral acids, a practitioner may have formidable after-effects to encounter; hence he should be guarded in his prognosis.

With respect to the treatment of the acute stage of poisoning, the removal of the salt from the alimentary canal by emetics, or the free use of the stomach-pump, is the principal object. A mixture of carbonate of magnesia, or of lime in linseed-tea, might be exhibited with benefit. Brown sugar, dissolved in water at 102°, tends to decompose the chromic acid, and to reduce it to the less irritating state of oxide of chromium. Chemical antidotes can, however, be of little benefit, unless administered within a few minutes after the poison has been swallowed.

Poisoning by Scheele's Green, used in Confectionary. By **Alfred S. Taylor**, Lecturer on Chemistry and Medical Jurisprudence at Guy's Hospital. (Guy's Hospital Reports, Vol. vii., Part i. P. 218.)

A girl, seven years of age, ate a slice of a cake with part of a green ornament that covered it. A few minutes after swallowing it, she began to vomit violently. There was great prostration of strength, with a pinched and anxious countenance, accompanied by severe pain in the epigastrium, and great thirst; no fluids could be retained on the stomach. The child also complained of a choking and burning sensation in the throat, and the tongue was foul. The pulse was 120; the skin dry and burning; there was no purging, and the urine was natural in quantity and in appearance. There was headach, with great somnolency; the eyes were red and watery. The vomiting and the other symptoms described continued with slight intermissions for twenty-four hours. The child took some lemonade, the vomiting then ceased, and the other symptoms abated. The child was convalescent in three days, although the tongue remained foul for a week afterwards.

It appears that three other children partook of the same substance; but they vomited shortly afterwards, and speedily recovered.

Remarks.—Mr J. B. Hicks, in whose practice the above cases occurred in June 1849, forwarded to Mr Taylor, with the above particulars, a portion of the ornamental confectionary which had caused the symptoms. It was nothing more than sugar strongly coloured, of a bright green colour, by the arsenite of copper. The quantity of the arsenite swallowed by the child could not be ascertained with precision; but, from the symptoms, it was evidently enough to endanger life.

The symptoms were similar to those which have been observed in numerous other cases of poisoning by confectionary among children. Nothwithstanding the perfect insolubility of this poison in water, it is clear that this does not prevent its rapid absorption, when it has entered the stomach; and this fact should teach caution in drawing an inference respecting the *inertness* of a metallic salt, merely because water does not dissolve it. The symptoms of poisoning with arsenic appeared in a few minutes. The thirst, burning sensation in the throat, and the redness of the conjunctivæ were special symptoms, indicative of the action of the poison. Jaundice has been sometimes a consequence of this form of poisoning, but it did not exist in the case reported.

In closing these remarks, Mr Taylor observes that the sale of this powerful poison for use in confectionary should be immediately prohibited by law. There is scarcely a year passes without numerous accidents being reported to have occurred from this pernicious practice.

Case of Poisoning by Laburnum Flowers. By ALFRED S. TAYLOR, Lecturer on Chemistry and Medical Jurisprudence at Guy's Hospital. (Guy's Hospital Reports, Vol. vii. Part i. P. 219. London, 1850.)

Mr Barber, of Stamford, communicated to Mr Taylor the particulars of the following case of poisoning by the flowers of the laburnum tree, which, although not singular, presents many points of interest. A child between three and four years of age ate about twelve laburnum flowers soon after it had had its breakfast. In about fifteen minutes it complained of sickness and severe pain in the stomach. Vomiting came on, and the matter vomited consisted of mucus mixed with the yellow petals of the laburnum. An emetic was given, which effectually cleared the stomach of the flowers. The symptoms gradually abated, and the child recovered. There was no purging. It does not appear that the child ate any of the leaves, seeds, or pods of the laburnum. The effects observed were solely due to the petals of the flowers which had been swallowed.

Remarks.—The poisonous properties of the laburnum tree were first pointed out by Haller; but the noxious effects have hitherto been chiefly witnessed in cases in which the leaves or seeds have been eaten. The experiments of Dr Christison have proved that the bark of the tree is highly deleterious; and the case which is here reported by Mr Barber shows that even the petals of the flower are very energetic. The rapid supervention of symptoms, and the severity of the pain occasioned by a small number of the flowers, are the circumstances chiefly deserving of notice in the above case. One other case, in which a child suffered from symptoms of poisoning by the flowers, has been described by Mr North in in the "Medical and Physical Journal." The symptoms were in this instance rather indicative of an action on the nervous system. The face was pale; the skin cold; breathing laborious, and there was great feebleness of pulse. There were twitchings of the muscles of the face, with efforts of vomiting. As in Mr Barber's case, the whole of these symptoms disappeared on the expulsion of the flowers from the stomach..

Cytisine, the supposed active principle of the laburnum, has been detected in the seeds. Whether this principle exists in the flowers has not been ascertained. There is no doubt that the laburnum tree is highly poisonous, and as it is so commonly found in our gardens, the fact of its possessing this noxious action deserves the attention of medical practitioners.

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